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IN THE

Supreme Court of the United States

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Petitioner,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
AND SAMSUNG SEMICONDUCTOR, INC.,
Respondents.

Petition For Writ Of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTIONS PRESENTED

In 1992 the Patent and Trademark Office ("PTO") issued new regulations designed to limit applicants' costs, avoid uncertainty about inequitable conduct, and negate a disfavored Federal Circuit ruling by providing that only existing translations of prior art references need be submitted, that cited references will not be deemed as inequitably withheld, and that concise explanations in English of foreign language references, though required, may henceforth be subjective in nature and will not expose the applicant to loss of his patent for inequitable conduct.

Below, the Federal Circuit ruled that the courts' equitable discretion allows them to treat PTO regulations as merely "a floor" and to conclude, contrary to the 1992 regulations, that submitted references may be deemed "constructively withheld" and that partial translations or concise explanations omitting any feature deemed relevant by a court may result in forfeiture of the patent for inequitable conduct.

The questions thus presented are:

1. Given the requirement of judicial deference to agency regulations, may courts find patentees guilty of inequitable conduct for failure to observe judicially devised PTO disclosure standards different from and more stringent than standards expressly delimited by the PTO itself?

2. Are patentees facing forfeiture due to charges of inequitably withholding information from the PTO entitled to the due process defense of reasonable reliance on regulations and guidelines issued by the regulators with whom they dealt?

LIST OF PARTIES

The names of all parties in the court whose judgment is sought to be reviewed appear in the caption of this Petition for Writ of Certiorari.

LIST PURSUANT TO RULE 29.6

Petitioner Semiconductor Energy Laboratory Co. Ltd. ("SEL") has not issued shares to the public. It has a parent company that has issued shares to the public, the full name of which is TDK Corporation, a corporation of Japan. SEL has no other parent companies, subsidiaries, or affiliates that have issued shares to the public.

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PETITION FOR A WRIT OF CERTIORARI

Semiconductor Energy Laboratory Co., Ltd. ("SEL"), petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit in this case.

OPINIONS BELOW

The opinion of the Court of Appeals is reported at 204 F.3d 1368, and is reproduced at Appendix ("A.") 1-27. The Court of Appeals' order denying rehearing *en banc* is unreported. A. 100-01. The District Court filed two opinions on the inequitable conduct issue. The first is reported at 4 F.Supp.2d 477. A. 43-83. The second is reported at 24 F.Supp.2d 537. A. 84-99. The District Court issued an unreported ruling denying summary judgment on the related issue of obviousness. A. 32-35.

JURISDICTION

The judgment of the Court of Appeals was entered on March 2, 2000. Petitioner filed a timely combined petition for panel rehearing and rehearing *en banc*. The panel granted rehearing on March 29, 2000 and again on April 5, 2000 for the limited purpose of correcting errors in its opinion. A. 28-29 & A. 30-31. The Court of Appeals denied rehearing *en banc* on April 26, 2000. A. 100-01. This Court has jurisdiction pursuant to 28 U.S.C. § 1254(1).

STATUTE AND PTO REGULATIONS INVOLVED IN THE CASE

(A) Statute

35 U.S.C. § 6(a) (1991),[1] *Duties of [PTO] Commissioner*, in pertinent part provides:

> (a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents . . . . *He may*, subject to the approval of the Secretary of Commerce, *establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office* (emphases added). A. 102.

(B) PTO Regulations

PTO Rule 56 (37 C.F.R § 1.56), *Duty to disclose information material to patentability*, in pertinent part provides:

> *The duty to disclose* all information known to be material to patentability *is* deemed *to be satisfied if all information* known to be material to patentability of any

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[1] The authority of the United States Patent and Trademark Office ("PTO") to adopt regulations under 5 U.S.C. § 553 governing its proceedings is now found in 35 U.S.C. § 2(b)(2) (1999).

> claim issued in a patent *was cited by the Office or submitted to the Office* in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct (emphases added). A. 104.

PTO Rule 98 (37 U.S.C § 1.98), *Content of information disclosure statement*, in pertinent part provides:

> (a) Any *information* disclosure statement . . . shall include:
>
> (2) A legible copy of:
>
> (i) Each U.S. and *foreign* patent; [and]
>
> (3) *A concise statement of the relevance, as it is presently understood by the individual designated in §1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information that is not in the English language.* The concise explanation may be either separate from the specification or incorporated therein.
>
> (c) . . . If a written English-language translation of a non-English language document, *or portion thereof*, is within the possession, custody or control of, or is readily available to any individual designated in §1.56(c), a copy of the translation *shall accompany* the statement (emphases added). A. 107-08.

Section 609A(3) of the PTO's Manual of Patent Examining Procedure ("MPEP"), *Information Disclosure Statement*, in pertinent part provides:

> The concise explanation *may* indicate that a particular figure or paragraph of the patent or publication is relevant to the claimed invention. It *might* be a simple statement pointing to similarities between the item of information and the claimed invention. It is *permissible but not necessary* to discuss differences between the

cited information and the claims (emphases added). A. 120.

* * * *

Where the information listed is not in the English language, but was cited in a search report or other action by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office. This may be an explanation of which portion of the reference is particularly relevant, to which claims it applies, or merely an "X", "Y", or "A" indication on a search report. A. 120.

MPEP § 609C(2), *Information Disclosure Statement*, in pertinent part provides:

Information which complies with requirements as discussed in this section but which is in a non-English language will be considered in view of the concise explanation submitted (A(3) above) and insofar as it is understood on its face; e.g., drawings, chemical formulas, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. The examiner need not have the information translated unless it appears necessary to do so. The examiner will indicate that the non-English language information has been considered in the same manner as consideration is indicated for information submitted in English. *The examiner should not require that a translation be filed by the applicant.* The examiner should not make any comment such as that the non-English language information has only been considered to the extent understood, since this fact is inherent (emphasis added). A. 122.

MPEP § 901.05(d), *Translation*, in pertinent part provides:

> Examiners may consult the translators in the Translation Branch of the Scientific and Technical Information Center (STIC) for oral assistance in translating foreign patents or literature that are possible references for an application being examined. A. 125.
>
> * * * *
>
> Examiners can request written translations at any point in the examination process, at the discretion of the individual examiner, but are encouraged to use oral assistance and/or language reference resources as much as possible in the early phases of examination. A. 125.

MPEP § 901.06(a), *Scientific and Technical Information Center* (STIC), describes the STIC library collection, including foreign patent documents, as well as STIC services, including foreign patent and translation services. A. 126-31. The Foreign Patents Branch of the Foreign Document Division of the STIC is available to assist patent examiners in their examinations. The Branch can make available abstracts of foreign language references as well as provide oral and written translations. The translation staff includes Japanese translators. A. 131. The authority for the STIC is 35 U.S.C. § 8 (1975), directing the Commissioner to maintain a library of foreign and domestic materials to aid examiners in the discharge of their duties. A. 103.

STATEMENT

A. The Patent In Suit

U.S. Patent No. 5,543,636 (" '636 patent") in suit, awarded to one of Japan's leading inventors, Dr. Shumpei Yamazaki, teaches that liquid crystal display screens for laptop computers will avoid blurring caused by the electrical phenomenon of hysteresis, which degrades conventionally

structured thin film transistors ("TFTs"), if such TFTs employ a silicon nitride gate insulator and contain a channel region made of amorphous silicon in which oxygen, nitrogen, or carbon levels are super-purified to the critical level of $5x10^{18}$ atoms per cubic centimeter. Thus, the patent teaches the combination of four things: (1) a conventional TFT; (2) with a silicon nitride gate insulator; (3) a channel region made of amorphous silicon; (4) purified to $5x10^{18}$ or less atoms per cubic centimeter of oxygen, nitrogen, or carbon. A. 44.

B. The Infringement Case

Petitioner SEL filed suit in the United States District Court for the Eastern District of Virginia in late 1996, alleging that Samsung Electronics Co., Ltd. and related entities ("Samsung") had made and sold computer displays which infringed SEL's '636 patent. Samsung moved for summary judgment claiming that SEL's invention was an obvious combination of various purification teachings and any disclosed conventional TFT structure of the period. The court (Cacheris, J.) denied the motion on the ground that Samsung had not carried its burden of showing that a person skilled in the art would have known that impurities in the channel region could affect the performance or reliability of a TFT. A. 32-35. Samsung further asserted SEL had committed inequitable conduct in prosecuting the '636 patent, rendering the patent unenforceable, on the ground that SEL had defrauded the PTO; Samsung also counterclaimed that SEL had violated the antitrust laws and had committed RICO fraud. Both counterclaims were summarily dismissed. Samsung did not appeal its antitrust loss. It appealed its RICO loss but the District Court's ruling (A. 36-42) was affirmed below. A. 17-26.

C. The Inequitable Conduct Issue

Samsung did not contend that SEL had withheld any material reference from the PTO in the '636 patent prosecution. Nor did it ever assert that SEL said anything false to the PTO

during that prosecution. It alleged, in regard to a submitted prior art Japanese patent reference (Japanese Patent Laid-Open No. 56-135968) called "Canon '968," that SEL had purposely created and submitted a partial translation that was misleading because it failed to state that Canon '968 at one point teaches a structure like that of the TFT in the '636. With respect to SEL's concise explanation of the relevance of Canon '968 in its Information Disclosure Statement ("IDS") filed with the PTO, Samsung likewise pleaded that SEL should have explained the similarity of structure. Samsung later contended that SEL should have also translated or concisely explained in the IDS admonitions in Canon '968 to avoid atmospheric surface contamination (to obtain good Ohmic contact) contained in untranslated passages of the Canon '968 patent.

The inventor, Dr. Yamazaki, testified (A. 169) that he viewed Canon '968 as relevant insofar as it showed a TFT with a silicon nitride gate insulator – as was stated in the IDS. A. 135. Samsung did not call SEL's patent lawyer to the stand. Instead, it offered the testimony of an expert, who said the anti-contamination passages in Canon '968 were a relevant suggestion to combine the '968 with other references, but this expert did not speculate on what the inventor thought or may have thought. It was undisputed that SEL voluntarily had submitted the full reference (in Japanese) as required by PTO Rule 98(a)(2)(i) (A. 107), asked that it be considered by the patent examiner (A. 135), listed it on IDS Form PTO-1449 (A. 149), devoted a section of the IDS to it (A. 135-39), and in that section listed all references cited against it in Japan. A. 135-39. SEL's concise explanation accurately described Canon '968 as disclosing "the use of silicon nitride for a gate insulator layer of a thin film transistor." A. 135. As required by PTO Rule 98(c) (A. 108), SEL also submitted a *pre-existing* partial English translation in its files that further disclosed that the semiconductor layer of Canon '968 was made of amorphous silicon. A. 163-64.

Nothing in the record shows whether or not the PTO examiner of the '636 patent understood Japanese, worked with a PTO Japanese translator in reviewing Canon '968, or obtained and read a computer abstract of it in English. The PTO maintains a substantial translation capacity (including in Japanese) and collects computerized abstracts of foreign language references, which are available to its examiners. MPEP § 901.06(a) (A. 126-31). Examiners are instructed by MPEP § 609C(2) that they should not require applicants to file translations of foreign language references. A. 122.

In its first inequitable conduct decision, the District Court (Ellis, J.) found that the inventor made the "decision" (A. 78) to submit a partial translation that did not translate the anti-contamination passages and thus "knowingly concealed the full importance of the Canon '968 reference in an effort to mislead the PTO." A. 79. The court also found that such passages should have been mentioned in SEL's concise explanation as helping to provide "a good blueprint" toward combining Canon '968 with other references so as to show that the claimed invention was obvious. A. 55. The court acknowledged that the examiner could have secured a translation within the PTO, but speculated that SEL's "brief" (concise) statement of relevance (as stated in the IDS), combined with the partial translation, removed the examiner's incentive to do so. A. 78.

In a subsequent opinion in response to SEL's motion for reconsideration, the District Court acknowledged that SEL had created the partial translation for an earlier prosecution and was *compelled* by PTO Rule 98(c) to submit the partial translation as is in the '636 application. A. 90-91. Thus, SEL could not be found to have created it with a dubious purpose and could not be faulted for submitting it. The court thereupon adopted a new ground for decision, namely its view that patent applicants should have a duty to supplement pre-existing partial translations that might be misleading if

the PTO relied on them as being complete. A. 91 (including n.12). The PTO Rules were, in the District Court's view, "a floor" but "not a ceiling" for required submissions of translations of foreign language references. A. 91.

On the concise explanation issue, the initial decision did not mention that PTO Rule 98 set out a subjective standard of relevance and had been purposely amended to do so. Nor did it discuss MPEP § 609A(3), which explains that the PTO allows the applicant personal discretion in identifying similarities or differences in drafting such explanations. When the text, purpose, and history of these Rules were explained in reconsideration briefs, the court adhered to its previous conclusions without reference to the PTO Rules or their rule-making history and purpose.

On appeal, the Federal Circuit panel opinion embraced the District Court's view that, despite an explicit PTO regulation stating that the applicant's only duty is to submit pre-existing full or partial translations (A. 108), judges can create a rule that partial translations must be supplemented whenever they may be potentially misleading. A. 16. The panel did not discuss how the applicant could have discerned from the PTO regulations that it would ever have such a duty to supplement pre-existing partial translations.

The panel acknowledged, contrary to the district court, that SEL's submission of the complete patent in Japanese, a pre-existing partial English translation, and a concise explanation was in "technical compliance" with Rule 98's disclosure requirements. A. 13. SEL also claimed compliance with MPEP § 609(A)(3). *See* A.13. But the panel opined that MPEP § 609A(3), though somewhat permissive, was better read as granting discretion to the applicant solely in phrasing its concise explanation, as opposed to providing any latitude to omit any key teaching of the reference. A. 13-14. As to the PTO's 1992 Rule permitting the inventor to express relevance as he sees it, the panel concluded that it was "not

clearly erroneous" for the District Court to find that, since the inventor in this case was Japanese, a good scientist, and a frequent patentee, he must have (or should have) understood and believed in the relevance of passages he had not previously translated, and must have (or should have) understood that he had a duty to write a concise explanation that omitted no potentially key similarities. A. 12. The panel found that the untranslated, anti-contamination passage was the most relevant portion of Canon '968 (A. 15), a finding neither made by the District Court nor urged by Samsung.

D. Rules Of The PTO Governing Duty And Content Of Disclosure

This case involves the two most important Rules of the United States Patent and Trademark Office that apply in patent application proceedings, Rule 56 (duty of disclosure, also sometimes referred to as "duty of candor") and Rule 98 (content of that disclosure). The background that led to these Rules is essential to appreciating how the District Court and Federal Circuit impermissibly vitiated them.

In 1945, this Court held that judges in patent infringement cases may refuse to enforce patents when the patentee engaged in "fraud or other inequitable conduct" in dealing with the Patent Office. *Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co.*, 324 U.S. 806, 816 (1945). This doctrine engendered a sea change in patent infringement litigation, as accused infringers hired experts to scrutinize every word of patent applications and opine that uncited prior art was relevant in some sense and should have been submitted, and that it was inequitable not to do so. As courts began to embrace ever more expansive interpretations of "other inequitable conduct" and the defense became ubiquitous, *see* Robert J. Goldman, *Evolution of the Inequitable Conduct Defense in Patent Litigation*, 7 Harv. J. Law & Tech. 37 (Fall 1993), pressure to narrow the defense then grew, particularly among appellate judges. *See, e.g.*,

FMC v. Manitowoc Co., 835 F.2d 1411, 1415 (Fed. Cir. 1987) (Markey, C.J.) (defense used "too much"); *Burlington Ind., Inc. v. Dayco Corp.*, 849 F.2d 1418, 1422 (Fed. Cir. 1988) ("an absolute plague").

The Patent Bar complained to the PTO that the doctrine, in the hands of district judges, led to unpredictable results and the forfeiture of valuable patent rights, as well as increasing the costs and risks of obtaining patents. The PTO responded in 1977 with its first effort to codify what disclosures it required and what duty of candor it expected from those who come before it. The duty of candor was codified as Rule 56 (37 C.F.R. § 1.56). The PTO Rules were further clarified in 1982, but the problem of inconsistent and anomalous court holdings continued. *See generally* Jerome G. Lee, *Introduction: The Special Ad Hoc AIPLA Committee on Rule 56 and The Evolution of Proposed Rule 57*, 16 AIPLA Q. J. 1 (1988).

By 1987, a Patent Bar committee complained again and the PTO Commissioner concluded that the Bar was correct that "existing Rule 56 was indeed too imprecise, and could, and probably was, leading to unjustifiable charges of inequitable conduct." Harry F. Manbeck, Jr., *The Evolution and Issue of New Rule 56*, 20 AIPLA Q. J. 136, 140 (1992). Shortly thereafter, the PTO decided to devise disclosure and candor rules that would "balance the interests involved and be acceptable in the main both to the Bar and the PTO staff." *Id.* at 141. Those Rules were promulgated in 1992.

The 1992 Rules provided, *inter alia*, that (1) translating foreign language references was not required;[2] (2) any *pre-existing* full or *partial* translations of foreign language references must be submitted;[3] and (3) an applicant who does

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[2] MPEP § 609C(2) ("The examiner should not require that a translation be filed by applicant"). A. 122.

[3] PTO Rule 98(c). A. 108.

not submit a full translation may (a) submit a concise explanation of the relevance of the reference, *as seen by the most knowledgeable person* at that time [the italicized words having been added in 1992],[4] or (b) merely submit any foreign patent office search report in existence that ranks the degree of relevance (*i.e.*, "X" (particularly relevant) or "Y" (relevant)).[5] The PTO Commissioner stated that:

> The requirement for a concise statement of relevance has been eliminated except for foreign language references. Even there, an English language copy of a foreign search report will suffice.[6]

As noted above, MPEP § 609A(3) states what the PTO expected in a concise explanation:

> The concise explanation *may* indicate that a particular figure or paragraph of the patent or publication is relevant to the claimed invention. It *might* be a simple statement pointing to *similarities* between the item of information and the claimed invention. It is *permissible but not necessary* to discuss differences between the cited information and the claims. A. 120 (emphases added).

The new PTO Rules sought to decrease inequitable conduct uncertainty in three ways. First, the standard of relevance was tightened to condemn the withholding of references only when they made out a *prima facie* case of unpatentability.[7] Second, inequitable conduct was expressly *eliminated* for *all* "cited" references. That was done to undo a Federal Circuit

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[4] PTO Rule 98(a)(3). A. 107.

[5] MPEP § 609A(3). A. 120.

[6] Harry F. Manbeck, Jr., *The Evolution and Issue of New Rule 56*, included in *Evolution and Future of New Rule 56 and The Duty of Candor*, 20 AIPLA Q. J. 136, 142 (1992).

[7] PTO Rule 56(b)(2)(ii). A. 105.

case holding to the contrary.[8] Third, submissions fulfilling the duty of disclosure were deemed to satisfy the duty of candor. The latter two points were set out in new Rule 56:

> The duty to disclose all information known to be material to patentability *is deemed to be satisfied* if all information known to be material to patentability of any claim issued in a patent *was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98*. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. A. 104 (emphases added).

The 1992 Notice of Final Rulemaking stated that an applicant's duty of disclosure did not require an applicant to combine references against his own claims (comment 24), that the PTO was not placing a burden on an applicant to analyze references (comment 26), that the PTO will consider references if submitted in accordance with Rule 98 (comment 26), and that "relevance as the applicant sees it" language was added to Rule 98(a)(3) so that an applicant submitting a concise explanation of (subjective) relevance would not be accused of violating the duty of candor if more relevant portions of a reference later were found (comment 70). A. 112-13.

The PTO advised (A. 122) that there could be no assumption that the PTO had fully considered aspects of a

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[8] *A.B. Dick Co. v. Burroughs Corp.*, 798 F.2d 1392 (Fed. Cir. 1986); *see* Harry F. Manbeck, Jr., *The Evolution and Issue of New Rule 56*, 20 AIPLA Q. J. 138, 141-42 (1992) ("But certainly the applicant's duty will not be violated simply because the examiner cites a reference while the applicant may still be considering it. It remains to be seen whether the courts will follow the PTO, but hopefully this new approach in the rule will result in the rationale of *A.B. Dick* being limited to truly egregious circumstances").

reference that were not translated or explained in English. MPEP § 609C(2). Thus, under the PTO's new approach, an applicant who met the submission requirements of the PTO's Rules, yet did not translate or explain fully a foreign language reference, risked an infringement trial with a narrower presumption of administrative competence as to novelty,[9] but would not expect to face the risk of a finding of inequitable conduct based on his not having translated or fully explained the foreign language reference.

Finally, in May 1992 the PTO publicly announced that compliance with new Rules 97[10] and 98 assured that the information will be considered by the examiner:

> Once the minimum requirements are met, the examiner has an obligation to consider the information. *These rules provide certainty for the public* by defining what the requirements are, when the Office will consider information and when the Office will not consider information. A. 114 (emphasis added); *see also* A. 109.

In a special symposium issue of the AIPLA Quarterly Journal celebrating the introduction of new Rule 56, former Assistant Commissioner for Patents Rene D. Tegtmeyer wrote that "since the new rules are the PTO's preferred procedures for [placing pertinent prior art before the examiner], it would be difficult for the courts to make a conclusion of inequitable conduct in the situation where there was compliance with the new rules."[11] Similarly, John F.

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[9] That is, the presumption that public officials perform their assigned jobs. *E.g., Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1184 (Fed. Cir. 1995).

[10] PTO Rule 97 (37 C.F.R. § 1.97) specifies timing and other administrative details that must be met before the PTO will review an IDS. SEL complied with all requirements of Rule 97.

[11] Rene D. Tegtmeyer, *A Refocusing on Inequitable Conduct in New Rule 56*, included in *Evolution* and *Future of New Rule 56 and The Duty of Candor*, 20 AIPLA Q. J. 191, 199 (1992).

Lynch, with the firm of Arnold, White & Durkee, wrote in the same AIPLA issue:

> Thus, if the PTO defines the conduct that it expects with respect to the required disclosure of prior art references, it seems that the courts should not be capable of penalizing patent applicants who were in full compliance with that PTO rule on grounds that conforming to the Rule is nonetheless in violation of law.[12]

E. SEL's Compliance With PTO Rules 97 And 98, And The Examiner's Compliance With MPEP § 609C(2)

It is undisputed that SEL complied with the filing requirements of Rules 97 and 98 when submitting the Canon '968 reference (in Japanese), the pre-existing partial translation of it, and citing it in its IDS. A. 11. It also is undisputed that the examiner, as shown by her initials on Form PTO-1449 (a part of the IDS) (A. 149), considered the Canon '968 reference that had been cited to her by SEL, in accordance with MPEP § 609C(2). A. 121.

REASONS FOR GRANTING THE PETITION

This case warrants review because an important doctrine of this Court (nullification of patents on inequitable conduct grounds) has been extended well beyond its proper scope to allow judges to ignore basic principles of judicial deference,[13]

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[12] John F. Lynch, *New Rule 56: The Second Time Around*, 20 AIPLA Q. J. 145, 152 (1992).

[13] Deference must be accorded to agency rules, such as PTO Rules 56 and 98, that were subjected to the rigors of the Administrative Procedure Act, including notice and comment. *See, e.g., Christensen v. Harris County*, ___ U.S. ___, 120 S. Ct. 1655, 1663 (2000). The MPEP, a manual, is entitled to respect, but only to the extent that its interpretations of agency rules have the power to persuade. *Id.* The MPEP is the bible of patent practitioners, and is normally deemed "persuasive."

override Patent Office policies, improperly burden foreign and U.S. applicants by compelling them to make and provide costly written translations, and expose inventors to loss of their patents without fair warning that their compliance with clear regulations will afford them no safe harbor from second-guessing by accused infringers and courts. This Court should clarify that the equity power to refuse to enforce patents is not a license to impose on applicants or the PTO information requirements that the agency chose not to impose, for good policy reasons, and that such equity power does not allow forfeiture of patents for non-compliance with disclosure duties that applicants did not clearly know of in advance.

The doctrine under which courts refuse to enforce patents because the patentee engaged in inequitable conduct (usually fraud or deceit) in obtaining the patent can play a useful role in uncovering and thwarting schemes to undercut PTO Rules and goals. It has had the unfortunate result, however, of unleashing a flood of automatic allegations of bad conduct followed by unpredictable district court rulings. The Patent Bar and the Patent Office cooperated to create clear, predictable disclosure Rules in 1992. The Federal Circuit has now decided that district courts need not defer to those salutary new Rules, and the conflict between its view that PTO Rules are a "floor" but not a "ceiling" and the PTO's view that compliance with its disclosure rules insulates applicants from charges of inequitable conduct is total. All of the PTO's reforms are swept away.

In numerous cases, this Court has used its supervisory powers to ensure that federal courts do not arrogate to themselves discretion to override agency rules that carefully balance information needs against the costs of providing and reviewing such information. Surely, the exercise of such powers is needed in this case. In the last ten-year period for which statistics are available (1989-1998), an average of 44%

of the applicants for U.S. patents were foreign nationals.[14] They expect to submit the prior art from their countries in their native language. Japan is the leading source of foreign patentees.[15] The PTO must be free to cut cost, promote international comity,[16] and increase certainty by deciding not to impose costly translation duties on applicants and not to expose them to inequitable conduct risks as they comply with PTO Rules telling them how much English language explanation of submitted references is expected.

The Federal Circuit's decision that a submitted, considered reference is "constructively withheld" if not fully translated or completely explained is directly contrary to an explicit, intentional PTO Rule (Rule 56). This case tests whether the salutary effects of the 1992 PTO Rules will be nullified by the Federal Circuit's holding[17] that the carefully crafted 1992

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[14] United States Patent and Trademark Office, Information Products Division, U.S. Patent Statistics, Calendar Years 1963-1999. (The statistics show little year-to-year deviation in the last decade.)

[15] *See* Statement by Assistant Secretary of Commerce and Commissioner of Patents and Trademarks Harry F. Manbeck, Jr., Subcommittee On Commerce, Justice, State, The Judiciary And Related Agencies, Committee on Appropriations, House of Representatives, Mar. 5, 1991 (Japan was "clearly" the largest foreign country of origin; 19.6% of all foreign *and* domestic PTO patent filings in 1991 were of Japanese origin). The PTO was unable to provide more recent country-of-origin statistics. Petitioner has no reason to believe that Japan does not continue to remain the largest single originating foreign country.

[16] Japan, for example, does not recognize inequitable conduct as a basis for invalidating a patent. *In re Harita*, 847 F.2d 801, 807 (Fed. Cir. 1988). Thus, it is very important that the PTO provide clear guidance to foreign inventors who seek patent protection in the United States, especially as their references often will be in foreign languages.

[17] The Federal Circuit circulates precedential decisions to all judges of the Court before they are filed; the Court as a whole thereby "impliedly" clears all precedential decisions before they are released. Federal Circuit's Clerk's Office, Memorandum, *Questions and Answers About Petitions for*

Rules were "a floor" but "not a ceiling" (A. 13), that courts are free to enforce their own views of what a patentee's disclosure duties ought to be, and that courts may treat as decisive not whether the applicant complied with the governing Rules but whether he might have had a bad intent when complying with them.

A. This Case Should Be Reviewed To Clarify The Proper Role Of Judges In Weighing Charges of Inequitable Conduct While Adhering To Important Judicial Deference Principles

This Court frequently has held that a federal court, in reviewing agency action, must not stray beyond the judicial province by imposing on an agency or its applicants the court's own notion about what procedures are best for obtaining information or achieving the agency's goals. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519, 544 (1977). That decision rested partly on an earlier holding that administrative agencies "should be free to fashion their own rules of procedure and to pursue methods of inquiry capable of permitting them to discharge their multitudinous duties." *FCC v. Pottsville Broadcasting Co.*, 309 U.S. 134, 143 (1940); s*ee also FPC v. Transcontinental Gas Pipe Line Corp.*, 423 U.S. 326, 333 (1976) (agency should be allowed to determine how best "to develop the needed evidence"). Likewise, this Court has held that a reviewing court violates judicial deference principles when it substitutes its own balancing test for that chosen by an expert agency. *See, e.g.*,

---

Rehearing and Suggestions for Rehearing en Banc in the United States Court of Appeals for the Federal Circuit (undated but current). Thus, the opinion below speaks for the entire Court. No other Circuit is likely to take issue with the Federal Circuit in this case because all patent appeals are heard by that Court. *See* 28 U.S.C. § 1295(a)(1).

Immigration and Naturalization Service v. Aguirre-Aguirre, 526 U.S. 415, 418-20 (1999).

The statutory source of the PTO's authority to issue its own procedural Rules and regulations in 1992 was 35 U.S.C. § 6 (1991) (now 35 U.S.C § 2(b)(2) (1999)). A. 102. It now appears settled that the PTO is an expert administrative agency entitled to deference at least in connection with its Rules and regulations relating to its own procedures and standards for obtaining information. *See Dickinson v. Zurko*, 527 U.S.150, 154 (1999).

This case raises policy issues similar to those in *Vermont Yankee Nuclear Power* and *Aguirre-Aguirre*. The Federal Circuit has been granted great power over the development of this nation's patent laws, which makes it all the more important that it be reminded not to override the policy choices of the PTO in how that agency is administered. That is particularly important given the Federal Circuit's role as the sole overseer of the PTO in the first instance. 28 U.S.C. § 1295(a)(1). Here, as in the above cases, judges honestly may believe that the agency went too far in deciding what information it can do without when balancing costs and risks. But this Court has stressed that judicial skepticism about agency competence or judgment is not an excuse for overriding reasoned agency choices within the assigned scope of agency authority.

The reasons for deference to the PTO's administrative expertise are dramatically evident in this case. The Federal Circuit's decision not to defer to PTO regulations leaves the PTO's balanced disclosure procedures in disarray, exposing patent applicants to unwarranted costs and uncertainty. The conflicts between the opinion and the PTO's 1992 Rules and policy choices are manifest:

1. The PTO's amended Rule 56 says unconditionally that all references actually *cited* by the Office can create no duty

of candor issues. A. 104. The opinion, in contrast, says references are "constructively withheld" if submitted in a foreign language and not explained adequately in English. A. 14-17.[18]

2. The PTO's amended Rule 98(c) says there is no duty to translate a foreign language reference, merely a duty to submit any pre-existing full or partial translation in the possession of the applicant. A. 108. The opinion, in contrast, says that partial translations must be supplemented if incomplete or arguably incomplete. A. 15.[19]

3. PTO Rule 98(a)(3) (A. 107) and MPEP § 609A(3) (A. 120) purposely say the inventor may select and discuss in his concise IDS the relevant aspects as he sees them and need not analyze references or argue against patentability. The opinion, in contrast, says the inventor, if fluent in the foreign language and a good scientist, must explain all features that an adversary would find useful for arguing obviousness, and

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[18] The Federal Circuit did not consider that it is obviously incongruent for the PTO to require submission of foreign language patents (Rule 98(a)(2)(i)) if despite submission they remain "constructively withheld." In truth, applicants bent on fraud do not submit references. They conceal them. So far as petitioner is aware (after exhaustive research), this is the first case in which a court has inferred fraudulent intent when the applicant submitted the reference to the PTO, deemed it relevant, highlighted it in its IDS, and asked that it be considered.

[19] A partial translation is, of course, inherently incomplete. The panel opinion, therefore, alternatively suggests that an applicant "refrain" from submitting a partial translation if he "knows" it "will misdirect the examiner's attention from the reference's relevant teaching." A. 16. But a court cannot suggest that an applicant "refrain" from doing what an agency *requires* of him by Rule. Also, the panel does not explain how an applicant can "know" that he will lull an examiner into not examining a *submitted* foreign language reference when the examiner may know the reference (from prior work), know the language, or go to the STIC for an English-language abstract or translation services. *See* A. 125-31.

that an inventor is presumed to have believed that such features were relevant. A.12.

4. The PTO said it wanted to provide "certainty" by codifying the duty to disclose and the duty of candor. A. 114; *see* A. 109 and A. 111 (comment 1). The opinion means, however, that PTO Rules provide no certainty, since the Federal Circuit has invited district courts to set their own standards (above the PTO "floor") and has demonstrated that it will sustain those inflated standards.

5. The 1992 PTO Rules sought to provide that all applicants who submit foreign language references and deem them relevant would be equally immune from Rule 56 and Rule 98 charges of non-disclosure, since the reference will be "cited" and since any foreign office ranking or concise explanation selected by the applicant will suffice. The opinion, in contrast, creates a situation where applicants submitting European references are protected, because they can submit a European office ranking and need not explain further, while applicants submitting Japanese references need to translate fully or risk writing a concise explanation that may later be deemed too concise by a court, since Japan has no relevance ranking system. *See* MPEP § 609A(3) (A. 120).

6. The Rule 98(c) duty to submit pre-existing partial translations is easy to obey. In contrast, the new Federal Circuit-created duty to expand all partial translations that later may be found misleading is totally amorphous and unbearably risky. Full translation, no matter how costly, becomes the only safe alternative if the patent is potentially valuable.[20]

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[20] *See* A. 15 ("costly complete translation"). The Federal Circuit, while noting that (written) translations are costly, effectively imposed that cost on patent applicants and ignored that examiners can obtain *oral* translations (at little or no incremental cost to the PTO). MPEP § 901.05(d) (A. 125) & MPEP § 901.06(a) (A. 131).

The opinion (A. 15-16) seeks support in a statement in MPEP § 609C(2) to the effect that it cannot be assumed that an examiner has read and understood all untranslated passages of submitted materials. A. 122. That comment, however, is not part of Rule 56 and makes no mention of Rule 56. Rather, it simply alerts a patentee that he may not be able to rely on the normal presumption of administrative competence (*see* note 9, *supra*) in defending the validity (*i.e.*, novelty) of his patent in litigation. The comment cannot be read as opening up a patent to inequitable conduct attack when the examiner has appropriately initialed his or her consideration of prior art on Form PTO-1449. *See* A. 121 (discussion of Form PTO-1449). Rule 56 expressly precludes any such challenge with respect to *any* cited reference. A. 104.[21]

Finally, the opinion concludes that MPEP § 609A(3), which addresses the contents of a "concise explanation," is flexible about *how* features of a reference are discussed but not *what* must be discussed. A. 120. According to the Federal Circuit, the concise statement must identify all "key" features of a reference. A. 13-14. But the intentionally permissive words of § 609A(3) do not remotely support such a strained (and indeed bizarre) interpretation.[22] A guideline stating that an inventor "might" point to "similarities" as he perceives them cannot by judicial alchemy be transformed

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[21] PTO Rule 56 does not state that only English language materials are not subject to duty of candor charges if cited; it clearly says that *all* cited references are so protected. A. 104.

[22] Certainly, patent practitioners have never thought that PTO Rule 98(a)(3) or MPEP § 609A(3) required them to identify all or most similarities (and there often are many in any one reference). Heretofore, one-sentence summary explanations (just like SEL's for Canon '968 and other references in the IDS) have been commonplace. *See, e.g., Litton Sys., Inc. v. Honeywell, Inc.* 140 F.3d 1449, 1466 (Fed. Cir. 1998); *see also* n. 23, *infra*.

into a rule that an inventor (i) *must* identify all "key" similarities of a reference and (ii) will be presumed to see the same relevance in an alleged similarity as do his opponents at trial.[23]

In summary, this case is of vital importance because the Federal Circuit declined to give judicial deference to the basic PTO Rules governing the core of the patent examination process, thereby undercutting the valid policy of the PTO to provide certainty to applicants who obey PTO Rules, as well as subjecting patent applicants to unjust and inefficient uncertainties. It is clearly time for this Court to clarify that the inequitable conduct doctrine is intended to authorize courts to protect the integrity of the processes of the PTO, not to rewrite or override those processes.

B. This Case Should Be Reviewed To Clarify The Extent To Which Due Process And Fair Notice Principles Require Courts To Consider Whether Alleged Inequitable Conduct In Patent Prosecution Is Defensible Under Reasonable Readings Of PTO Regulations And Guidelines

Petitioner believes that there also would be great benefit from this Court clarifying that its 1945 ruling in *Precision Instrument*, *supra*, while allowing courts to protect the patent prosecution process from "fraud or other inequitable conduct," does not authorize courts either to override proper PTO regulations and policy choices or to find willful

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[23] This Court uses the word "concise" in its own Rules. *See, e.g.*, Supreme Court Rule 14.1(9)(h). The effect is that "key" facts or arguments are not made or are edited out in favor of points perceived to be more "key." The PTO invites exactly the same selection process. SEL's concise statement relating to Canon '968 cited two features (a TFT with a silicon nitride gate) (A. 135) specifically *claimed* in the '636 patent. A. 165. The cited similarities could not have been more germane. Samsung never suggested otherwise.

withholding of information by the patentee without explaining why the patentee's form of compliance was not reasonable under the rules that governed the prosecution of the challenged patent.

This Court has begun to emphasize that the Due Process Clause of the Fifth Amendment prohibits federal courts from retroactively changing administrative regulations in a way that denies individuals the ability to rely upon them for fair warning of conduct that could result in a deprivation of property. However, it has not yet clarified the due process effect of permissive PTO Rules on the power of federal courts to declare patents unenforceable for fraud or other inequitable conduct.

It has long been established that patents are a species of property protected by the Due Process clause of the Constitution. *See, e.g., Florida Prepaid Postsecondary Educ. Expense Bd. v. College Sav. Bank*, 527 U.S. 627, 642 (1999) (*quoting Brown v. Duchesne*, 19 How. 183, 197, 15 L. Ed. 595, 600 (1856) ("For, by the laws of the United States, the rights of a party under a patent are his private property"). Thus, it should be clarified that inequitable conduct rulings that deny a patent holder the right to enforce his property rights must comply with the principles of due process identified by this Court.

While federal courts are not subject to the Ex Post Facto clause of the Constitution, U.S. Const. art. 1, § 9, cl. 3, the Due Process Clause of the Fifth Amendment imposes a concomitant restriction on the judicial branch that accomplishes the same result. *Marks v. United States*, 430 U.S. 188, 191-92 (1977). Thus, like legislatures, federal courts are precluded from retroactively changing legal standards that otherwise give "fair warning of that conduct which will give rise to criminal penalties." *Id.* Such unexpected and unforeseeable judicial constructions are inconsistent with our fundamental concepts of ordered liberty

because they unfairly fail to give the adequate notice that is an essential element of due process. *Id.* Indeed, this Court has held that a court's unforeseeable application of a statutory interpretation of state law can deprive a person of due process of law. *Douglas v. Buder*, 412 U.S. 430 (1973) (even if state judge can deem traffic citation "an arrest" that must be disclosed, revocation of probation is unfair because probationer might not have foreseen that the judge would interpret the probation order that way). This Court has recognized that the same due process principles that can result in deprivation of liberty also apply to deprivations of property interests through unwarranted administrative action. *See, e.g., BMW v. Gore*, 517 U.S. 559, 574 n.22 (1996) (basic protection of due process clause against judgments without notice is implicated by civil penalties).

Petitioner and his counsel proceeded at least on the basis of reasonable constructions of PTO Rules 56, 98, and MPEP § 609A(3) by submitting the full Canon reference, a pre-existing partial translation of it, and an accurate concise explanation highlighting two key similarities (*see* note 23, *supra*). There is no finding that their construction of these Rules and regulations was so unreasonable as to constitute bad faith. Moreover, the fact that they complied with these Rules and regulations to the point where the PTO actually *cited* the challenged reference discharged, as far as the PTO is concerned, the applicant's duty of disclosure to the agency with respect to that reference. Rule 56 expressly states that the duty to disclose is satisfied with respect to "all information known to be material to patentability of any claim issued in a patent *[that] was cited by the Office* . . . ." A. 104 (emphasis added). The rule-making history is clear that these Rules were promulgated as the standards of conduct for applicants in patent application proceedings that courts would necessarily have to adopt as the compliance standards against which inequitable conduct would be measured. *See* PTO, *Duty of Disclosure*, 57 Fed. Reg. 2021,

2023-24 (comments 1 & 4) (Jan. 17, 1992) (Rule 56 standards will control in inequitable conduct litigation). A. 111-12.

This Court recently held that due process is denied when courts expose patent owners to penalties based on claims against which they have no opportunity to defend. *Nelson v. Adams USA, Inc.*, ___ U.S. ___, 120 S. Ct. 1579 (2000). As in *Nelson*, SEL had no reason to *anticipate* that it would be held to translation and explanation requirements stricter than those clearly set out in PTO Rules and the MPEP. This Court held in *United States v. Penn Industrial Chem. Corp.*, 411 U.S. 455, 414 (1973), that compliance with a regulation is a complete defense to a crime. There should be no difference when inequitable conduct is at issue. Inequitable conduct is an offense against the PTO in the procurement of a patent based on evil intent. 6 Donald S. Chisum, *Chisum On Patents* § 19.03[1], at 19-102 (1999). A showing that the government as regulator reasonably can be said to have allowed or encouraged the conduct in question negates evil intent. *See also United States v. Anderson*, 579 F.2d 455, 459-60 (8th Cir. 1978) (reasonable interpretation of certification requirement precludes prosecution for false statement). SEL's IDS was accurate, not false, and it was not only well within the range of what the PTO requested through Rule 98(a)(3) as amplified in MPEP § 609A(3) but, as discussed in note 22, *supra*, was archetypal of concise statements in patent prosecutions. Yet the Federal Circuit never discusses the reasonable reliance issue. It merely proclaims judicial power to extend or interpret duties of disclosure after the fact.

Similarly, when, as in this case, there is no false statement, only an alleged failure to say enough, the cases make clear that bad intent may not be found unless the questioner unambiguously asked for the full information, and the accused's answer unequivocally denied that more facts existed. *See United States v. Johnson*, 937 F.2d 392, 399 (8th

Cir. 1991) (request to contractor to submit price quote based upon quantity stated in Air Force letter created ambiguity as to whether Air Force was requesting contractor to certify stated quantity as accurate); *United States v. Manapat*, 928 F.2d 1097, 1099-1102 (11th Cir. 1991) (questions about traffic and criminal convictions on medical history form were so fundamentally ambiguous as to preclude conviction under § 1001 as matter of law). Similar issues are involved in this case. Certainly, a request for the patent applicant's view of relevance, which might "point[ ]" to "similarities" (A. 120), is not an unambiguous request that all specific similarities be identified in the IDS.[24] Nor was there any basis for the courts below to assume that the PTO, having asked for some similarities or differences, would be misled and believe that every one-sentence description of relevance is a complete listing of all features arguably related to obviousness analysis.

Furthermore, federal courts have recognized that due process requires that administrative agencies provide adequate notice of their requirements. *E.g., General Electric Co. v. United States Environmental Protection Agency*, 43 F.3d 1324, 1328-29 (D.C. Cir. 1995) ("But as long ago as 1968, we recognized this 'fair notice' requirement in the civil administrative context"). Petitioner suggests that the same due process principle of adequate notice should remain binding upon judicial review of a party's conduct before an administrative agency. Thus, no patentee should face the

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[24] In light of the request, a statement that a reference teaches a TFT with a silicon nitride gate (A. 135) hardly can be understood as an unequivocal denial that other similarities might be found in 32 pages of Japanese text and five figures. Moreover, no PTO examiner could possibly believe from looking at the documents that the IDS (A. 135) and partial translation (A. 163-64) (which identified itself as a partial translation) described everything of relevance in the submitted Japanese patent (A. 152-62). Also, no PTO examiner would think so because no PTO Rule called for complete explanations of all relevant features. *See* note 22, *supra* (one reference can contain many similarities).

ultimate sanction of forfeiture of his valuable patent for failure to list all "key" similarities when the administrative rule did not call for, and cannot be reasonably interpreted as calling for, a listing of all "key" similarities.[25] Thus, this case should be reviewed not only because the Federal Circuit invaded the policy discretion of the PTO but also deprived the patentee of property without considering his reasonable reliance on PTO regulations.

In summary, this Court should review this matter to clarify that patentees accused of inequitable conduct in their dealings with the PTO have the same rights to reasonable-reliance defenses as do persons accused of fraud, false statements, or the like.

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[25] A regulation requiring the listing of all "key similarities" would invite litigation not only over what was "key" but also what was "similar." For example, Samsung's counsel elicited from Dr. Yamazaki that he viewed the (undisputed) absence of any teachings in Canon '968 on the need to clean in the channel region of a TFT and on the low level of cleaning that was needed in that region as *differences* with his '636 claims, not similarities. A. 178. It is not unusual for one person's "similarities" to be another's "differences." Thus, the improvised "key similarities rule" imposed by the Federal Circuit on the PTO is uncertain, unworkable, and unconstitutionally vague as an administrative guideline, and can only be countered by (mostly) foreign patent applicants submitting costly full translations of their (often many) foreign language references. *See* A. 133-135 (Dr. Yamazaki concisely explains *nine* Japanese patents in his '636 prosecution alone.).

CONCLUSION

For the reasons stated, certiorari should be granted.

Respectfully submitted,

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OFFICE OF THE CLERK

No. ——

IN THE

Supreme Court of the United States

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Petitioner,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
AND SAMSUNG SEMICONDUCTOR, INC.,
Respondents.

Petition For Writ Of Certiorari to the United States Court of Appeals for the Federal Circuit

APPENDIX TO PETITION FOR WRIT OF CERTIORARI

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APPENDIX A
(Federal Circuit Decision)

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

98-1377, 99-1103

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff-Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS CO. AMERICA, INC.
AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants-Cross Appellants.

J. ALAN GALBRAITH, Williams & Connolly, of Washington, DC; and JOEL DAVIDOW, Ablondi, Foster, Sobin & Davidow, P.C., of Washington, DC, argued for plaintiff-appellant. With them on the brief was DAVID S. BLATT, Williams & Connolly. Of counsel was MICHAEL T. BRADY, Ablondi, Foster, Sobin & Davidow. P.C

DAVID J. HEALEY, Tobor, Goldstein & Healey L.L.P., of Houston, Texas, argued for Defendants-cross appellants. With him on the brief was GARY J. FISCHMAN. of counsel on the brief were RICHARD L. STANLEY, Arnold White & Durkee, of Houston, Texas; and CECILIA H. GONZALEZ, Howrey & Simon, of Washington. DC. Of counsel was BASIL CARL CULVBA, Howrey & Simon.

Appealed from: United States District Court for the Eastern District of Virginia

Judge Thomas Selby Ellis III

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

98-1377, 99-1103

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff-Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.
AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants-Cross Appellants.

DECIDED:March 2, 2000

Before MICHEL, *Circuit Judge*, SKELTON, *Senior Circuit Judge*, and SCHALL, *Circuit Judge*.

[2] MICHEL, *Circuit Judge*.

On October 10, 1996, Semiconductor Energy Laboratory Co., Ltd. ("SEL") sued Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Semiconductor, Inc. (collectively "Samsung") in the United States District Court for the Eastern District of Virginia, alleging that Samsung's production and sales of active matrix displays infringed SEL's U.S. Patent No. 5,543,636 ("the '636 patent") directed to semiconductor technology. The district court first granted SEL's motion for summary judgment dismissing Samsung's federal and New Jersey Racketeer Influenced and [3] Corrupt Organizations ("RICO") counterclaims. *See SEL v. Samsung*, 4 F. Supp. 2d 473 (E.D. Va. 1998) ("*SEL I*"). After a seven-day bench trial, the district court also held the '636 patent to be unenforceable

for SEL'S inequitable conduct before the Patent and Trademark Office ("PTO"). *See SEL v. Samsung*, 4 F. Supp. 2d 477-(E.D. Va. 1998) *("SEL 2"); SEL v. Samsung*, 24 F. Supp. 2d 537 (ED. Va. 1998) ("SEL 3"). Both parties appeal. Because we are not persuaded that the district court either abused its discretion in holding the '636 patent unenforceable for inequitable conduct or improperly dismissed Samsung's federal and New Jersey RICO counterclaims. we *affirm*.

BACKGROUND

SEL is a Japanese company specializing in the research and development of semiconductor technology. SEL engages in no manufacturing and supports its research efforts from revenues from patent licensing. Since 1980, SEL has filed over 5,000 patent applications worldwide and has been awarded approximately 1,500 U.S. and foreign patents. Dr. Shunpei Yamazaki, a solid state physicist and the president and majority shareholder of SEL, is the named inventor or co-inventor on most of SEL's patents, including the '636 patent.

Entitled "Insulated Gate Field Effect Transistor" ("IGFET"), the '636 patent claims a non-single crystal silicon thin film transistor ("TFT"), a type of IGFET. Such TFTs can be used to switch the pixels in an active matrix display unit on or off. The TFT includes a source, a drain, a silicon nitride gate insulator, an insulated substrate, and an intrinsic amorphous silicon channel region. The channel region is "sandwiched" between the gate insulator and the insulated substrate. By limiting the level of oxygen, carbon, or nitrogen in the channel region to an amount not exceeding 5×10^{18} atoms/cm^3, the [4] claimed invention greatly improves the TFT's electrical properties and consequently overcomes potential deficiencies, such as hysteresis (blurring).

The application for the '636 patent was filed on June 7, 1995, and the '636 patent itself issued on August 6, 1996;

SEL alleges a much earlier priority date of May 18, 1984, however. Gerard Ferguson, SEL's patent attorney, prosecuted the application for the '636 patent and its ancestor applications, except for a brief period when Dr. Yamazaki revoked his power of attorney because Mr. Ferguson sought to submit certain material prior art references to the PTO.

The '636 patent began as a former 37 C.F.R. § 1.60 (1995) ("Rule 60") divisional application, and thus had its own Information Disclosure Statement ("IDS") [1] The IDS, filed on November 15, 1995, was fifteen pages long. The IDS was accompanied by a Form PTO-1449 listing ninety references that it wished to make of record, each of which the examiner initialed. These references included Japanese Laid-Open Application No. 56-135968, assigned to Canon K.K. ("the Canon reference"). In the IDS, SEL submitted the entire 29-page Canon reference in its original Japanese, a concise explanation of its relevance, and an existing one-page partial English translation from a prior unrelated patent application. The concise explanation succinctly described the Canon reference as disclosing "the use of silicon nitride for a gate insulating layer of a thin film transistor." The one-page partial translation covered four short sections of the Canon reference describing a TFT structure, a semiconductor layer consisting of [5] amorphous silicon, a gate electrode coated with silicon nitride, and an empirical observation of the effect of substituting silicon oxide for silicon nitride. SEL also made of record three references that a potential licensee, IBM, had brought to its attention as important prior art for obviousness purposes: a 1983 article by C.C. Tsai, entitled "Amorphous Si Prepared in a UHV Plasma Deposition System" ("the Tsai

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[1] Under former Rule 60, a divisional application included a copy of the previous application, but did not include the previous file wrapper. By contrast, a 37 C.F.R. § 1.62 (1995) ("Rule 62") continuation application required the application to "utilize the file wrapper and contents of the prior application." 37 C.F.R. § 1.62(e).

article"), and two of Dr. Yamazaki's solar cell patents, Japanese Patent Laid-Open Application Nos. 59-35423 ("the '423 application") and 59-35488 ("the '488 application"). The Tsai article and the '423 and '488 applications all teach the reduction of impurities below the level claimed in the '636 patent.

On October 10, 1996, SEL filed a complaint in the United States District Court for the Eastern District of Virginia alleging that Samsung's active matrix displays and computers having such displays infringed three of SEL's semiconductor patents: the '636 patent, U.S. Patent No. 5,521,400 ("the '400 patent"), and U.S. Patent No. 5,349,204 ("the '204 patent").[2] Samsung denied infringement and asserted numerous affirmative defenses, including non-enablement, obviousness, best mode violation, and inequitable conduct. Samsung subsequently counterclaimed, charging SEL with federal and New Jersey RICO, antitrust, and unfair competition violations.

SEL moved for summary judgment on Samsung's inequitable conduct defense and on Samsung's RICO, antitrust, and unfair competition counterclaims. The district court granted SEL's motion on the RICO and antitrust counterclaims, but denied it on the inequitable conduct defense and the unfair competition counterclaim.

[6] After a seven-day bench trial, the district court found the '636 patent to be unenforceable for inequitable conduct under two alternative theories. First, the district court determined that, by submitting a concise explanation and a one-page partial translation of the Canon reference that were accurate but misleadingly incomplete, SEL had intentionally withheld the Canon reference from the PTO. *See SEL 2*, 4 F. Supp. 2d

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[2] On March 4, 1998, SEL by stipulation amended its complaint to remove its allegations that Samsung was infringing the '400 and '204 patents. leaving the '636 patent the only patent-in-suit.

at 484. The concise statement, for example, identified only the silicon nitride gate as pertinent, and neglected to discuss the Canon reference's admonition to avoid impurities. Second, the district court determined that, by mischaracterizing the Tsai article as applying primarily to solar cells rather than TFTs in arguments to the PTO. SEL had intentionally misled the examiner into believing that the Tsai article was not material. *See id.* at 486.

The district court cited multiple facts as demonstrating SEL's deceitful intent. For example, Dr. Yamazaki could not satisfactorily account for his misstatement of the level of impurities discussed in U.S. Patent No. 4,766,477 to Nakagawa ("the Nakagawa reference") during the prosecution of U.S. Patent No. 5, 315, 132 ("the '132 patent"), which issued on an ancestor application to that of the '636 patent.[3] The district court similarly discredited Dr. Yamazaki's claim that he did not comprehend the significance of the Tsai article, since he had described a speech by Dr. Tsai discussing her work as "spectacular," had requested the article from Dr. Tsai in October 1983, and had cited it [7] in a 1984 article in the Journal of Non-Crystalline Solids. Moreover, Dr. Yamazaki's own '423 and '488 applications had expressly stated that the benefits of the low levels of impurities in solar cells also applied to TFTs. Though Dr. Yamazaki had submitted the Tsai article and his '423 and '488 applications to the PTO during the prosecution of the application for the '636 patent and the '455 application, the district court noted that he did so only after IBM, a potential licensee, expressly called its attention to these

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[3] *SEL 2* provides a genealogy chart clarifying the relationships between the '132 patent, the '636 patent, and interim applications. *See* 4 F. Supp. 2d at 497. In short, the '636 patent resulted from a divisional application of U.S. Patent Application No. 425,455 ("the '455 application"), which in turn was a continuation of U.S. Patent Application No. 214,494 ("the '494 application"), which in turn was a divisional application of the application which resulted in the '132 patent.

references. Thus, the district court concluded that "[t]he evidence demonstrate[d] a sophisticated, subtle, and consistent effort to hide the ball from the PTO in a manner plainly at odds with an applicant's duty of candor, good faith, and honesty." *SEL 2*. 4 F. Supp. 2d at 496.

In response to SEL's motion to reconsider *SEL 2*, the district court issued a new opinion correcting its previous discussion of the Tsai article. See *SEL 3*, 24 F. Supp. 2d at 537. The district court recognized that SEL's misrepresentations with respect to the Tsai reference had actually occurred during SEL's prosecution of the '455 and '494 applications, the two applications immediately preceding the application that resulted in the '636 patent, and were not repeated during the prosecution of the application that resulted in the '636 patent. Relying upon a doctrine of "infectious unenforceability" discussed, but not applied, in *SEL 2*, 4 F. Supp. 2d at 493, however, the district court held that SEL's misrepresentations during the prosecution of the ancestor '455 and '494 applications provided an alternative basis for rendering the '636 patent unenforceable. *See SEL 3*, 24 F. Supp. 2d at 545.

[8] DISCUSSION

I. Inequitable Conduct

Patent applicants are required to prosecute patent applications with candor, good faith, and honesty. *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178, 33 USPQ2d 1823, 1826 (Fed. Cir. 1995). "[I]nequitable conduct includes affirmative misrepresentation of a material fact, failure to disclose material information, or submission of false material information, coupled with an intent to deceive." *id.* The alleged infringer, whether a defendant in a patent infringement suit or a declaratory judgment plaintiff must demonstrate by clear and convincing evidence both that the

information was material and that the conduct was intended to deceive. *See id.*

The court first discerns whether the withheld references or misrepresentations satisfy a threshold level of materiality and whether the applicant's conduct satisfies a threshold showing of intent to deceive. *See id.* If these thresholds are satisfied, the trial court balances materiality and intent to determine whether the equities warrant the conclusion that inequitable conduct occurred. *See id.* at 1178, 33 USPQ2d at 1827. "In light of all circumstances, an equitable judgment must be made concerning whether the applicant's conduct is so culpable that the patent should not be enforced. " *id.*

We may reverse a determination of inequitable conduct only if it is based on "clearly erroneous findings of fact or on a misapplication or misinterpretation of applicable law, or evidences a clear error of judgment on the part of the district court." *Id.* We review the district court's subsidiary determinations of materiality and intent for clear error, and may disturb them only if we are left with "a definite and firm conviction" [9] that the district court committed a mistake. *Id.* We review a district court's ultimate determination of inequitable conduct under an abuse of discretion standard. *See id.*

A. Materiality

37 C.F.R. § 1.56 (1995) ("Rule 56") defines information as material to patentability when:

> [I]t is not cumulative to information already of record or being made of record in the application, and
>
> (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
>
> (2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentabiiity relied on by the Office, or

(ii) Asserting an argument of patentability.

A withheld reference may be highly material when it discloses a more complete combination of relevant features, even if those features are before the patent examiner in other references. *Molins*, 48 F.3d at 1180, 33 USPQ2d at 1828.

Reiterating many of its arguments before the district court, SEL contends that the untranslated portions of the Canon reference were not material to patentability because they were cumulative to other information. More particularly, SEL alleges that the Canon reference, only discloses a conventional IGFET device and generally teaches the avoidance of impurities on the surface of the intrinsic semiconductor layer. SEL also contends that the Canon reference, whether alone or combined with other references. would not have established a prima facie case of unpatentability, since it does not disclose the maximum impurity level of oxygen, nitrogen, or carbon in the channel region for overcoming the hysteresis problem.

[10] We discern no clear error in the district court's finding that the Canon reference was material. The district court cited several reasons for finding the Canon reference to be material to patentability. First, the district court found that the Canon reference was not cumulative, since the untranslated portions of Canon contained a more complete combination of the elements claimed in the '636 patent than anything else before the PTO. Specifically, the Canon reference discloses the intrinsic amorphous silicon layer, the silicon nitride gate insulator, the sandwich structure, and the key admonition to avoid impurities in semiconductor materials, each of which is claimed by the '636 patent. Second, the district court found that the Canon reference established a prima facie case of unpatentability in combination with other information, particularly the teachings of the Tsai article or Dr.

Yamazaki's own '423 or '488 applications. As Samsung's expert, Dr. Fonash, explained, a fully translated Canon reference would have provided a "good blueprint" for making the exact device described by the '636 patent. Consequently, taken together with the Tsai article, the Canon reference would have rendered obvious the asserted claims of the '636 patent.

B. Intent

"Intent need not be proven by direct evidence; it is most often proven by a showing of acts, the natural consequence of which are presumably intended by the actor." *Molins*, 48 F.3d at 1180. 33 USPQ2d at 1828-29. Generally, intent must be inferred from the facts and circumstances surrounding the applicant's conduct. *id.* at 1180-81, 33 USPQ2d at 1829. "Since the fact-finder has personally heard and observed the demeanor of witnesses, we accord deference to the fact-finder's assessment of a witness's credibility and character." ki. at 1131 , 33 USPQ2d at 1829.

[11] Proof of high materiality and that the applicant knew or should have known of that materiality makes it difficult to show good faith to overcome an inference of intent to mislead. *See Critikon. Inc. v. Becton Dickinson Vascular Access, Inc.*. 120 F.3d 1253, 1257, 43 USPQ2d 1666, 1669 (Fed. CIr. 1997). "The more material the omission or the misrepresentation, the lower the level of intent required to establish inequitable conduct, and vice versa." id. at 1256. 43 USPQ2d at 1668. In evaluating whether the district court clearly erred in its factual finding of deceitful intent, we must assure ourselves that the district court did not overlook mitigating factors. See *Akron Polymer Container Corp. v. Exxel Container, Inc.*, 148 F.3d 1380, 1384, 47 USPQ2d 1533, 1536 (Fed. Cir. 1998).

Again reiterating its arguments to the district court, SEL argues that it did not intend to mislead the examiner by

submitting only a partial translation of the Canon reference and a concise statement not addressing its key teachings, such as its admonition to avoid impurities. SEL contends that Dr. Yamazaki subjectively believed that the Canon reference was valuable only for its disclosure of the conventional IGFET structure.

As evidence of its good faith, SEL emphasizes that it submitted the entire Canon reference in its original Japanese. SEL also underscores the fact that it meticulously complied with 37 C.F.R. § 1.98(a),(c)[4] (1995) by providing an accurate, concise [12] explanation of the relevance of the Canon reference and a pre-existing partial translation. SEL further claims that Manual of Patent Examining Procedure ("MPEP") § 609 establishes "permissive," "non-burdensome," "free of risk," and "gently suggestive at best, and certainly not mandatory" standards for foreign language references. For example, SEL notes that MPEP § 609 does not require that the applicant discuss differences between the cited information and the claims. See MPEP § 609A(3); see also

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[4] 4 Rule 98 ("Content of information disclosure statement") provides in pertinent part:

> (a) Any information disclosure statement filed under § 1.97 shall include:
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> (3) A concise explanation of the relevance, as it is *presently understood* by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.
>
> (c) . . . if a written English-language translation of a non-English document, *or portion thereof*, is *within the possession*, custody, or control of, or is readily available to any individual designated in § 1.56(c), a copy of the translation shall accompany the statement.
>
> (emphasis added.)

Duty of Disclosure, 57 Fed. Reg. 2021, 2026, cmts. 24 & 26 (1992) (stating that Rule 56 does not require that applicant combine references against its own claims or analyze references.). According to SEL, its technical compliance with the FTO Rules should weigh against an inference of intent to deceive the examiner. *Cf Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 939, 15 USPQ2d 1321, 1327 (Fed. Cir.. 1990) (holding that amendment made as of right under MPEP weighs against an inference of intent to deceive). As further proof of its good faith, SEL highlights the fact that it voluntarily provided the Canon reference to the PTO without any prodding from a licensee (e.g., IBM).

[13] We discern no clear error in the district court's finding that SEL willfully misrepresented the Canon reference. As a general matter, we first note that the district court found Dr. Yamazaki and SEL's other witnesses to be not credible. Instead, the district court credited the testimony of Samsung's witnesses over that of SEL's whenever there was a conflict. The district court further found that Dr. Yamazaki, a solid state physicist whose native language is Japanese, understood the materiality of the Canon reference. The district court also determined that Dr. Yamazaki knew that a more complete translation or concise explanation of the relevance of the Canon reference would decrease the likelihood of the '636 patent being issued, given his understanding of the Canon reference and his immense experience in prosecuting patents. The district court thus concluded that Dr. Yamazaki must have consciously decided which sections to reveal to the PTO through SEL's partial translation.

Though SEL repeatedly highlights those actions that are not improper, SEL cannot overcome a finding of deceitful intent merely by showing that it did certain things properly. Rather, SEL must explain its conduct in failing to provide a more complete translation or concise explanation of the Canon reference. This it simply does not do. As the district

court noted, "the record as a whole reflects a clear pattern and practice of initial disclosure, followed by incremental disclosure only when compelled by the circumstances to do so, followed, at times, by mischaracterization." *SEL 2*, 4 F. Supp. 2d at 496.

SEL's technical compliance with Rule 98 and its entreaty to MPEP § 609A(3) lend it little aid. Though Rule 98 requires that the applicant provide any existing translation of a foreign reference, Rule 98 provides neither a safe harbor nor a shield [14] against allegations of inequitable conduct. As the district court explained, Rule 98 merely "provides a floor for required submissions of translations of foreign applications, not a ceiling; it is by no means an excuse or license for concealing material portions of a prior art reference." *SEL 3*, 24 F. Supp. 2d at 541. The district court found that Dr. Yamazaki knew that the Canon reference disclosed the important admonition to avoid impurities and that the preexisting, one-page partial translation did not discuss this teaching. Given the critical absence of this teaching from the partial translation and his knowledge of this absence, "[i]t was incumbent upon [Dr. Yamazaki] to provide the PTO with sufficient information for a reasonable examiner to consider the [submission] in context, not with a selective and misleading disclosure. The inventor[] failed to do that and cannot post facto hide behind the MPEP guidelines to argue that what [he] did with a purpose should be disregarded." *Refac Int'l, Ltd. v. Lotus Dev. Corp.*, 81 F.3d 1576, 1584, 38 USPQ2d 1665, 1672 (Fed. Cir. 1996).

Similarly, MPEP § 609A(3) merely indicates that "[t]he concise explanation may indicate that a particular figure or paragraph of the patent or publication is relevant to the claimed invention. It might be a simple statement pointing to similarities between the item of information and the claimed invention." Thus, though MPEP § 609A(3) allows the applicant some discretion in the manner in which it phrases

its concise explanation, it nowhere authorizes the applicant to intentionally omit altogether key teachings of the reference. If, as SEL suggests, the concise statement requirement allowed applicants to selectively disclose what they know as long as what they selected for disclosure was accurate, applicants could easily mislead the examiner by explaining all but one of the relevant elements, thereby leaving the examiner with the impression [15] that the reference did not anticipate, render obvious, or otherwise make unpatentable the claimed invention.

C. Failure to Disclose

Finally, SEL contends that, because it submitted the entire untranslated Canon reference to the PTO, it cannot be deemed to have withheld the reference from the examiner. *See Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1582, 18 USPQ2d 1001, 1015 (Fed. Cir. 1991) ("When a reference was before the examiner. . . , it can not be deemed to have been withheld from the examiner."). SEL notes that the PTO does not require applicants to translate foreign references into English. *See MPEP* § 609C(2) ("The examiner should not require that a translation be filed by the applicant."). SEL thus claims that it cannot be faulted for not providing a more complete translation of the Canon reference.

SEL argues that the examiner, who is presumed to have done his job correctly, must also be presumed to have read and understood the Canon reference in its native Japanese. *See Molins*, 48 F.3d at 1184, 33 USPQ2d at 1832 (absent proof to the contrary, court assumed that examiner had considered a post-issuance, English-language submission under 37 C.F.R. § 1.501 that the examiner had initialed). SEL emphasizes that the PTO maintains a staff of translators and that an examiner "may request translations throughout the

examination process. "*Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1582, 42 USPQ2d 1378. 1386 (Fed. Cir. 1997).

We perceive no clear error in the district court's conclusion that SEL effectively failed to disclose the Canon reference to the PTO by providing a one-page, partial translation of the entire 29-page application. By submitting the entire untranslated [16] Canon reference to the PTO along with a one-page, partial translation focusing on less material portions and a concise statement directed to these less material portions, SEL left the examiner with the impression that the examiner did not need to conduct any further translation or investigation. Thus, SEL deliberately deceived the examiner into thinking that the Canon reference was less relevant than it really was, and constructively withheld the reference from the PTO. SEL's submission hardly satisfies the duty of candor required of every applicant before the PTO.

SEL's contention that the examiner must have both read and fully understood the entire untranslated Canon reference based on his having read the misleadingly incomplete one-page translation and concise statement is absurd. Though the examiner is indeed presumed to have done his job correctly, there is no support in the law for a presumption that the examiner will understand foreign languages such as Japanese or will request a costly complete translation of every submitted foreign language document, particularly in the absence of any reason to do so. Rather, as MPEP § 609C(2) reveals, the examiner's understanding of a foreign reference is generally limited to that which he or she can glean from the applicant's concise statement:

> Information which complies with requirements as discussed in this section but which is in a non-English language will be considered *in view of the concise explanation submitted* (A (3) above) *and insofar as it is*

> *understood on its face; e.g. drawings, chemical formulas*, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. *The examiner need not have the information translated unless it appears necessary to do so.* The examiner will indicate that the non-English language information has been considered in the same manner as consideration is indicated for information submitted in English. The examiner should not require that a translation be filed by applicant. *The examiner should not make any* [17] *comment such as that the non-English language information has been considered to the extent understood since this fact is inherent.*

(emphasis added). Consequently, while the examiner's initials require that we presume that he or she considered the Canon reference, this presumption extends only to the examiner's consideration of the brief translated portion and the concise statement.

SEL's contention that the PTO should not require applicants to translate all foreign references into English misses the critical point. The duty at issue in this case is the duty of candor, not a duty of translation. The duty of candor does not require that the applicant translate every foreign reference, but only that the applicant refrain from submitting partial translations and concise explanations that it knows will misdirect the examiner's attention from the reference's relevant teaching. Here, the desirability of the examiner securing a full translation was masked by the affirmatively misleading concise statement and one-page translation.

Thus, we discern no clear error in the district court's findings with respect to materiality and intent, and hold that the district court did not abuse its discretion in finding the '636 patent to be unenforceable for SEL's inequitable conduct in providing a misleadingly incomplete, partial translation of

the Canon reference and a narrow and incomplete concise statement. Given our holding that the '636 patent is unenforceable in light of SEL's inequitable conduct with respect to the Canon reference, we expressly decline to reach the district court's alternative determination of "infectious unenforceability" based on SEL's misconduct during the prosecution of the '455 and '494 applications.

II. Federal and New Jersey RICO Counterclaims

Samsung cross-appeals the district court's grant of summary judgment dismissing its federal and New Jersey RICO counterclaims. We review a grant of summary judgment without deference, reapplying the same legal standard as the district court to the same record before it and drawing all reasonable inferences in favor of the non-moving party, here Samsung. See *Ford Motor Co. v. United States*, 157 F.3d 849, 854 (Fed. Cir. 1998).

A. Federal RICO

The asserted sections of the federal RICO statute provide:

> (a) It shall be unlawful for any person who has received any income derived, directly or indirectly, from a pattern of racketeering activity . . . to use or invest, directly or indirectly, any part of such income, or the proceeds of such income, in acquisition of any interest in, or the establishment or operation of, any enterprise which is engaged in, or the activities of which affect, interstate or foreign commerce.
>
> . . .
>
> (c) It shall be unlawful for any person employed by or associated with any enterprise engaged in, or the activities of which affect, interstate or foreign commerce, to conduct or participate, directly or indirectly, in the conduct of such enterprise's affairs

> through a pattern of racketeering activity or collection of unlawful debt.

18 U.S.C. § 1962. Section 1962(a) makes it illegal to *invest* the income of racketeering activity. Section 1962(c), by contrast, makes it illegal to *engage* in racketeering activity. Section 1964(c) provides a person with a civil remedy for injuries to business or property from violations of Section 1962.

A RICO plaintiff must demonstrate a "pattern of racketeering activity" consisting of at least two instances of racketeering activity. 18 U.S.C. § 1961(5); *Mylan Labs. Inc.* [19] *v. Matkari*, 7 F.3d 1130, 1135 (4th Cir. I 993). Mail and wire fraud both qualify as predicate acts under the federal RICO statute. See 18 U.S.C. § 1961(1) The mail fraud statute makes illegal the use of U.S. mail for "any scheme or artifice to *defraud*, or for obtaining money or *property* by means of false pretenses." 18 U.S.C. § 1341 (emphasis added). Similarly, the wire fraud statute makes illegal the use of "wire, radio, or television communication" for "any scheme or artifice to defraud, or for obtaining money or property by means of false or fraudulent pretenses, representations, or promises." 18 U.S.C. § 1343.

Samsung alleges a "three-party pass-through fraud structure" wherein SEL committed numerous acts of mail and/or wire fraud on the PTO. Samsung first claims that, long before the '636 patent issued, SEL targeted Samsung as a defendant for a patent infringement suit Samsung alleges that a competitor of Samsung, a "VIP" client of SEL, then agreed to pay SEL's litigation costs in its suit against Samsung. According to Samsung, SEL made material misrepresentations to the PTO using the U.S. mail and withheld material references from the PTO. Samsung claims that this fraud resulted in the improper issuance of the three originally asserted patents, which SEL in turn has employed to extort Samsung and others. Although Samsung concedes that the

direct fraud was perpetrated upon the PTO, Samsung asserts that it was the indirect but intended victim of this scheme. As a result of this litigation, Samsung claims to have spent millions of dollars on legal fees and design-around efforts and to have sustained injury to its relationships with its customers, who sought assurances that Samsung will indemnify them against potential patent infringement liability claims brought by SEL.

[20] The district court cited *Mylan Labs., Inc. v. Akzo. N.V.*, 770 F. Supp. 1053, 1071-73 (D. Md. 1991), *affd sub nom. Mylan Labs., Inc. v. Matkani*, 7 F.3d 1130 (4th Cir. 1993), as foreclosing inequitable conduct during patent prosecution from qualifying as a required predicate act. In *Akzo*, the RICO plaintiff alleged that the defendants committed predicate acts of mail fraud against the Food and Drug Administration ("FDA") in obtaining its approval of abbreviated new drug applications ("ANDAs"). The *Akzo* court ruled that ANDAs, as unissued licenses, were not property in the government's hands for mail fraud purposes, and thus the defendant's conduct before the FDA did not constitute predicate acts for purposes of the federal RICO statute. See id. at 1072-73. The district court viewed ANDAs and patents to be indistinguishable.

On appeal, Samsung distinguishes *Akzo* as involving licenses, in which the government has no financial interest and which therefore are not property. By contrast, under federal patent law and Supreme Court precedent, an issued patent constitutes property. See 35 U.S.C. § 261 ("[P]atents shall have the attributes of personal property."); *Hartford-Empire Co. v. United States*, 323 U.S. 386, 415 (1945). Samsung notes that 35 U.S.C. § 261 does not expressly distinguish between a patent in the hands of the patentee or the government. In fact, the federal government is subject to suit when it infringes a patent that it has granted. See 28 U.S.C. § 1498(a).

Alternatively, Samsung contends that a patent is actually more closely analogous to a franchise than a license. Whereas a license is a promise by the government not to interfere, see *Toulabi v. United States*, 875 F.2d 122, 125-26 (7th Cir. 1989), a franchise is a right that belongs to the government when conferred upon a citizen and that inheres in the sovereign power, see *Borre v. United States*, 940 F.2d 21 5, 220 (7th [27] Cir. 1991). The Seventh Circuit has held that fraud in procuring a franchise is subject to the mail fraud statute. See *Borre*, 940 F.2d at 220. According to Samsung, a patent, like a franchise, enables its owner to exclude others, including the government.

We apply our own law to determine whether SEL's conduct before the PTO qualifies as mail fraud for purposes of the predicate acts requirement of the federal RICO statute. *See Pro-Mold & Tool Co. v. Great Lakes Plastics. Inc.*, 75 F.3d 1568, 1574, 37 USPQ2d 1626, 1631 (Fed. Cir. 1996) (holding that, though we do not have exclusive jurisdiction over unfair competition claims, our own circuit law nonetheless determines when inequitable conduct also constitutes unfair competition). We agree with the district court that inequitable conduct before the PTO cannot qualify as an act of mail fraud or wire fraud for purposes of the predicate act requirement. In the context of the mail fraud statutes, "the words 'to defraud' commonly refer 'to wronging one in his property rights by dishonest methods or schemes' and 'usually signify the deprivation of something of value by trick, deceit, chicane or overreaching.' " *McNally v. United States*, 483 U.S. 350, 358 (1987) (quoting *Hammerschmidt v. United States*, 265 U.S. 182, 188 (1924)).[5]

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[5] We note that, in 1988, Congress added 18 U.S.C. § 1346 in response to *McNally*. Section 1346 provides:

> For purposes of this chapter, the term "scheme or artifice to defraud" includes a scheme or artifice to defraud another of the intangible right of honest services."

On appeal, however, Samsung does not argue that SEL's conduct before the PTO was intended to "defraud another of the intangible right of honest

In this case, however, the PTO has not been defrauded of property. Although that "a patent is property, protected against appropriation both by individuals [22] and by government, has long been settled," *Hartford-Empire*, 323 U.S. at 415, an application that has not yet matured into a patent cannot properly be deemed government property.

We also reject Samsung's attempt to analogize a patent to a franchise for purposes of the mail and wire fraud statutes. A franchise involves a transfer of extant rights previously held exclusively by the sovereign. See *California v. Central Pac. R. Co.*, 127 U.S. 1, 40 (1888). Examples of franchises include cable television and public utilities. See *Borre*, 940 F.2d at 220. By contrast, the patent right to exclude a party from practicing a particular invention is never held by the sovereign, but only by the patentee after issuance.

In short, Samsung has failed to satisfy the predicate act requirement for its federal RICO counterclaims, as SEL's inequitable conduct did not "defraud" the government of any "property" under either the federal mail or wire fraud statutes. Consequently, we hold that the district court properly granted summary judgment dismissing Samsung's federal RICO claims.

B. New Jersey RICO

The district court noted that the New Jersey RICO statute was modeled after the federal statute, see *State v. Ball*, 661 A.2d 251, 258 (N.J. 1995), and that its relevant sections, N.J.S.A. § 2C:41-2(a),(c), also require proof of a pattern of racketeering activity. In view of its rejection of Samsung's mail and wire fraud allegations as predicate acts with respect to the federal RICO counterclaims, the district court

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services," and thus we do not address the possibility of such defrauding here.

concluded that Samsung's New Jersey RICO counterclaims were similarly deficient.

[23] On appeal, Samsung argues that racketeering under the New Jersey RICO Act includes New Jersey crimes as well as "equivalent crimes under the laws of any other jurisdiction," N.J.S.A. § 20:41-l.a. Samsung notes that qualifying predicate acts under the New Jersey statute would include forgery and fraudulent practices, see N.J.S.A. §2C:41-1.a(1)(O), offering a false instrument for filing, see N.J.S.A. § 2C:21-3.b, and making false statements to PTO examiners in violation of federal penal provisions such as 18 U.S.C. § 1001.[6] Samsung contends that the district court ignored these additional state and federal violations and hence improperly dismissed its state RICO claims.

SEL responds that, regardless of the expanded scope of predicate acts under the New Jersey RICO statute, we can still affirm the district court's dismissal of the NewJersey RICO claims on the alternative ground of federal preemption. In dismissing Samsung's federal RICO counterclaims, the district court suggested that RICO claims and the inequitable conduct defense are mutually exclusive remedies. The district court noted that the affirmative defense of inequitable conduct supplies an adequate remedy by rendering the patent

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[6] 18 U.S.C. § 1001 provides:

> Whoever in any matter within the jurisdiction of any department or agency of the United States knowingly or willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements on representations, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement on entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

unenforceable and possibly also entitling the alleged infringer to attorney fees under 35 U.S.C. § 285.

[24] Samsung disputes that the federal patent laws preempt its state RICO counterclaims, noting that the patent statute nowhere expressly excludes RICO remedies. Samsung claims that SEL's misconduct is not a "garden-variety" instance of inequitable conduct, and emphasizes the Supreme Court's recognition of concurrent RICO and state law remedies for a single activity. *See Humana, Inc. v. Forsyth*, 525 U.S. 299, 303 (1999) (holding that the McCarran-Ferguson Act, which bars application of a federal law in the face of a state law enacted "for the purpose of regulating the business of insurance," did not preclude the concurrent assertion of the federal RICO statute and Nevada insurance law). Samsung also notes that the New Jersey RICO Act states that "[t]he remedies provided in this act shall be cumulative with each other and other remedies at law." N.J.S.A. § 2C:41-6.1.

Samsung underscores the broad remedies available under the RICO statutes. With respect to monetary relief, the patent laws would permit only the recovery of attorney fees, while the New Jersey RICO statute would allow the prevailing plaintiff "threefold any damages he sustains and the cost of the suit, including a reasonable attorney's fee, costs of investigation and litigation." N.J.S.A. § 2C:41-4.c. Samsung asserts that its alleged damages, which include design-around costs and loss of goodwill, are a recognized form of RICO damages. *See. e.g., Khuana v. Innovative Health Care Sys., Inc.*, 130 F.3d 143, 150-51 (5th Cir. 1997), *cert. granted, judgment vacated*, and *case dismissed as moot*, 119 S. Ct. 442 (1998).

Finally, Samsung analogizes its New Jersey RICO counterclaims to the state tort claims held not to be preempted in *Dow Chem. Co. v. Exxon Corp.*, 139 F.3d 1470, 46 USPQ2d 1120 (Fed. Cir. 1998). in *Dow*, we held that the state law claim of intentional [25] interference with actual and

prospective contractual relationships was not preempted by federal patent law, even though the claim was based partly on acts of alleged inequitable conduct before the PTO. We reasoned that because the state cause of action also included elements not found in the patent infringement defense of inequitable conduct, but in the marketplace against inhabitants of the state, the state tort as applied was not an impermissible attempt to offer patent-like protection. See id. at 1477, 46 USPQ2d at 1126. Samsung claims that, like the state claim in Dow, Its RICO counterclaims allege "additional elements not found in the federal patent law cause of action," id. at 1473, 46 USPQ2d at 1123, such as SEL's targeting of Samsung and its eventual filing of this lawsuit.

We agree with SEL that the federal patent laws preempt Samsung's New Jersey RICO counterclaims. As applied, the state RICO counterclaims in this case are more closely analogous to the state abuse of process counterclaim held to be preempted in *Abbott Labs. v. Brennan*, 952 F.2d 1346, 21 USPQ2d 1192 (Fed. Cir. 1991), than the intentional interference with contractual relationship counterclaim in Dow. In *Abbott*, the applicant had committed inequitable conduct by backdating a request for an extension of time and falsely averring that the request had been timely made, resulting in his loss of priority. This court concluded that "the federal administrative process of examining and issuing patents, including proceedings before the PTO's boards, is not subject to collateral review in terms of the common law tort of abuse of process." *id.* at 1357, 21 USPQ2d at 1201.

Like the state abuse of process claim in *Abbott*, "the wrong alleged and for which state law tort damages [are] sought [is] no more than bad faith misconduct before the [26] PTO." *Dow*, 139 F.3d at 1477, 46 USPQ2d at 1126. As pleaded by Samsung, its New Jersey RICO counterclaims occupy a field identical in scope with the inequitable conduct defense. If the conduct constituting inequitable conduct, without more, could

be considered predicate acts under federal or state RICO law, then every accused infringer asserting an inequitable conduct defense would also bring such a RICO counterclaim. An additional state cause of action predicated so squarely on the acts of inequitable conduct would be "contrary to Congress' preemptive regulation in the area of patent law." *Abbott*, 952 F.2d at 1357, 21 USPQ2d at 1201.

Samsung's contention that its New Jersey RICO counterclaims allege additional elements not found in the federal patent law cause of action for inequitable conduct is inaccurate. Samsung conveniently ignores the distinction between acts that may be proven as part of a state RICO violation and those which *must* be proven for liability. As applied by Samsung, the New Jersey RICO statute does not contain as necessary elements of the offense the sorts of acts beyond misrepresentations or willful omissions to the PTO that Samsung alleges in this case. To satisfy the predicate act requirement (and indeed all requirements) of the state RICO statute, Samsung alleges only the act of filing a false statement, but this act completely overlaps with the alleged misrepresentations giving rise to its inequitable conduct defense. Samsung's additional allegations that SEL targeted and intended to assert the '400, '204. and '636 patents against Samsung even before these patents issued do not take Samsung's application of the New Jersey RICO statute outside of the ambit of the inequitable conduct defense. Every patent applicant files its application believing it could assert the resulting patent against infringers (or else seeking the patent would be a worthless [27] endeavor), and it is not unusual for a patent applicant to "target" potential defendants even before the patent issues. Cf MPEP § 708.02(11) (allowing an applicant to file a Petition to Make Special to accelerate prosecution in view of actual infringement by another party). We therefore reject Samsung's attempts to contort the elements of inequitable conduct to satisfy the New

Jersey RICO statute, with its stated purpose of combating organized crime. See *N.J.S.A.* § 2C:41-1.1.c.

Thus, we affirm the district court's grant of summary judgment dismissing Samsung's New Jersey RICO counterclaims as preempted by the patent laws of the United States.[7]

CONCLUSION

The district court did not abuse its discretion in holding the '636 patent unenforceable for inequitable conduct. The district court correctly applied the statute, regulations, and case law, and did not make clearly erroneous findings of fact on materiality and deceptive intent. Under all the circumstances of record, the court did not seriously misjudge the import of the evidence, particularly the degree of materiality as against the level of deceptive intent, in reaching the conclusion that equity warranted rendering the patent unenforceable. In addition, the district court correctly granted [28] summary judgment dismissing Samsung's federal and New Jersey RICO counterclaims, the former as failing to allege legally adequate predicate acts. and the latter as preempted by the patent laws of the United States. Accordingly, we

AFFIRM.

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[7] For a civil federal RICO claim under 18 U.S.C. § 1962(c), the RICO "enterprise" must be distinct from the RICO "person," i.e., the defendant. *See Palmetto State Med. Ctr.. Inc. v. Operation Lifeline*, 117 F.3d 142, 148 (4th Cir. 1997). The district court also dismissed Samsung's federal and state RICO counterclaims on the ground that the alleged SEL "enterprise" consisting of SEL, Dr. Yamazaki, and Mr. Ferguson was insufficiently distinct from the SEL "person." Because we affirm the district court's dismissal of Samsung's respective federal and New Jersey RICO counterclaims as failing to allege a predicate act and as preempted under the circumstances of this case, we decline to reach the correctness of the district court's holding regarding this "enterprise" element.

[29] ADDENDUM B

PTO RULE § 1.56

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the tiling and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

APPENDIX B
(Order on Rehearing)

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

[Filed Mar. 29, 2000]

98-1377, 99-1103

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff-Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants-Cross Appellants.

NOTE: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public order.

ORDER

A combined petition for rehearing and petition for rehearing en banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal,

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for rehearing is granted for the limited and sole purpose of amending the opinion issued on March 2, 2000 as follows:

On the thirteenth line from the top of page 5, replace "Dr. Yamazaki" with "Kunitaka Yamamoto, SEL's in-house patent agent."

The petition for rehearing en banc is still pending.

FOR THE COURT,

/s/ Jan Horbaly
JAN HORBALY
Clerk

Dated: March 29, 2000

cc: J. Alan Galbraith, Esq.
David J. Healey, Esq.

APPENDIX C
(Order on Rehearing)

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

[Apr. 5, 2000]

98-1377, 99-1103

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff-Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants-Cross Appellants.

CORRECTED

NOTE: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public order.

ORDER

A combined petition for rehearing and petition for rehearing en banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal,

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for rehearing is granted for the limited and sole purpose of amending the opinion issued on March 2, 2000 as follows:

On the last line of page 5, replace "Dr. Yamazaki" with "Kunitaka Yamamoto, SEL's in-house patent agent."

The petition for rehearing en banc is still pending.

FOR THE COURT,

/s/ Jan Horbaly
JAN HORBALY
Clerk

Dated: April 5, 2000

cc: J. Alan Galbraith, Esq.
David J. Healey, Esq.

APPENDIX D

Obviousness Ruling

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

C.A. No. 96-1460-A

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.
Plaintiff,

vs

SAMSUNG ELECTRONICS CO., LTD., *et al.*,
Defendants.

The above-entitled matter came on to be heard in the United States District Court, Alexandria, Virginia, commencing at 10 a.m. on March 6, 1998.

BEFORE: The Honorable JAMES C. CACHERIS, Presiding United States District Judge

* * * *

[6] THE COURT Okay. I'm ready to rule on this one.

This matter is before the Court on Defendant's Motion for Summary Judgment Declaring U.S. Patent 5,543,636, the '636 patent referred to in this case, Invalid as Obvious under 35 USC Section 103.

Plaintiff, Semiconductor Energy Laboratory Co., Ltd., alleges that Defendants Samsung Electronics Company, Samsung Electronics America, and Samsung Semiconductor, Inc. infringed its '636 patent. The '636 Patent describes a type of insulated gate field effect transistor, the IGFET. Defendants claim that the patent is invalid because it involves a combination of concepts which would have been

[7] obvious to a person of ordinary skill in the art at the time of the patent application.

The '636 Patent describes an IGFET with a concentration level of the impurity atoms oxygen, carbon, and nitrogen below $5x10^{18}$ atoms per cubic centimeter in the channel region. For purposes of this motion, the parties apparently agree that at the time of the patent application, conventional IGFETs were well known, as were methods for obtaining the specified level of impurity. Defendants argue that based on this knowledge, the method impurity level in the channel region would have been obvious to one skilled in the art.

Summary judgment is appropriate only if "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show there's no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247 (1986); Fed. R. Civ. P. 56(c). "A district court must grant summary judgment if, after an adequate time for discovery, a party fails to make a showing sufficient to establish the existence of an essential element of that party's case." *Baber v. Hospital Corp. of America*, 977 F.2d 872, 874 (4th Cir.1992) (citation omitted).

[8] However, a court may only grant a summary judgment motion "if the non-movant failed to make a sufficient showing on an element on which he had the ultimate burden of proof." *Brock v. Entre Computer Ctrs., Inc.*, 933 F.2d 1253, 1259 (4th Cir. 1991) (citation omitted).

"The mere existence of a scintilla of evidence in support of the party's position would be insufficient; there must be evidence on which the jury could reasonably find for that party." *Anderson*, 477 U.S. 252. In reviewing the evidence submitted by the parties, "the court must draw any inferences in the light most favorable to the non-movant." *Brock*, 933 F.2d at 1259 (citation omitted).The court must ultimately

"determine whether the record taken as a whole could lead a reasonable trier of fact to find for the non-movant." The Brock case.

Patents are presumed to be valid under 35 USC Section 282, and invalidity because of obviousness must be, demonstrated by clear and convincing evidence.

Para-Ordinance Manufacturing, Inc. v. SGS Importers Int'l, Inc., 73 F.3d 1085 (Fed. Cir. 1985).

35 USC Section 103(a) states:

> "A patent may not be obtained if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the [9] invention was made to a person having ordinary skill in the art to which said subject matter pertains.

The determination of obviousness is a matter of law and is based on findings of fact relating to the scope and content of the prior art, the differences between the claimed invention and the prior art, and the level of ordinary skill in the art. *Para-Ordinance Mfg., Inc.*, 73 F.3d at 1088; *Glaverbel Societe Anonyme Ordinance Mfg., & Supply, Inc.*, 73 F.3d, 1550, 1555 (Fed. Cir. 1995). When present, objective evidence such as commercial success, copying or long-felt need must be considered. The *Glaverbel* case. Obviousness may not be established using hindsight or in view of the inventor's teachings or suggestions.

In opposition to Defendants' Motion, Plaintiff cites a report of its expert, Dr. Gerald Lucovsky, "Report" In the report Dr. Lucovsky describes the scope and content of the prior art, the differences between the '636 Patent and the prior art, and the level of ordinary skill in the art at the time of the application.

Dr. Lucovsky states that prior to the application for the '636 Patent, no one had suggested that impurities in the

channel region of a thin film transistor, "TFT", a type of IGFET, have any effect on performance or reliability. Report, paragraph 44. Therefore, according to Dr. Lucovsky, [10] any argument that the claims at issue in the '636 Patent are obvious could only be based entirely on hindsight.

In its Motion for Summary Judgment, Defendants argue that this Court can conclude that the '636 Patent is obvious by examining statements made by the inventor, Dr. Yamazaki, and reviewing the prior art. However, after reviewing the materials cited by Defendants, this Court cannot find that from the perspective of a person of ordinary skill in the art at the time of the patent application, the claims would have been obvious. Simply put, Defendants do not provide an expert report or any other clear and convincing evidence refuting Dr. Lucovsky's claims.

Therefore, Defendants failed to meet their burden of demonstrating invalidity for obviousness. Accordingly, Defendants' Motion for Summary Judgment Declaring the '636 Patent Invalid as Obvious under 35 USC Section 103 is denied.

APPENDIX E

(Dismissal of RICO Counterclaims, 4 F.Supp.2d 473-77)

UNITED STATES DISTRICT COURT
E.D. VIRGINIA
ALEXANDRIA DIVISION

No. CIV. A. 96.1460-A

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff;

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG. ELECTRONICS AMERICA, INC., AND
SAMSUNG SEMICONDUCTOR, INC.,
Defendants.

March 20,1996

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[474] MEMORANDUM OPINION

CACHERIS, District Judge.

This case is before the Court on Plaintiffs Motion for Summary Judgment on Defendants' Racketeer Influenced and Corrupt Organizations ("RICO") Counterclaims.

I.

Plaintiff, Semiconductor Energy Laboratory Co., Ltd. ("SEL") originally alleged that Defendants Samsung Electronics Company, Samsung Electronics America, and

Samsung Semiconductor, Inc. (collectively "Samsung") infringed three of its patents. SEL has since dismissed its claims as to two of the patents. Samsung filed a counterclaim alleging antitrust violations as well as violations of Title IX of the Organized Crime Control Act of 1970, 18 U.S.C. Sections 1961-1968, or the RICO statute, and its New Jersey counterpart, New Jersey Statute 2C:41-2. Samsung argues that SEL fraudulently obtained the three patents originally at issue in this lawsuit and then filed infringement claims against Samsung in an effort to receive money for the patents.

II.

[475] Summary judgment is appropriate only if "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986); Fed.R.Civ.P. 56(c). "A district court must grant summary judgment if, after an adequate time for discovery, a party fails to make a showing sufficient to establish the existence of an essential element of that party's case." *Baber v. Hospital Corp. of Am.*, 977 F2d 872, 874 (4th Cir.1992). However, a court may only grant a summary judgment motion "if the non-movant failed to make a sufficient showing on an element on which he had the ultimate burden of proof." *Brock v. Entre Computer Ctrs., Inc.*, 933 F.2d 1253, 1259 (4th Cir.1991).

"The mere existence of a scintilla of evidence in support of the [party's] position will be insufficient; there must be evidence on which the jury could reasonably find for th[at] [party]." *Anderson*, 477 U.S. at 252. In reviewing the evidence submitted by the parties, "the court must draw any inferences in the light most favorable to the non-movant" *Brock*, 933 F.2d at 1259. The court must ultimately

"determine whether the record taken as a whole could lead a reasonable trier of fact to find for the non-movant" *Id.*

III.

Samsung claims that SEL violated 18 U.S.C. Section 1962(a) and (c).[1] To prove RICO violations, the RICO plaintiff must demonstrate a "pattern of racketeering activity" which must consist of at least two instances of racketeering activity. 18 U.S.C. § 1961(5); *Mylan Lab., Inc. v. Matkari.*, 7 F.3d 1130, 1135 (4th Cir.1993). In this case, Samsung asserts a "three-party pass-through fraud structure", arguing that SEL committed numerous acts of mail and/or wire fraud[2] on the United States Patent and Trademark Office ("PTO") which resulted in approval of certain patent applications. According to Samsung, SEL then sought money from Samsung and others by threatening them with litigation over these fraudulently obtained patents. Put another way, Samsung claims that SEL defrauded the PTO, but the intended, albeit indirect, victim of the fraud is Samsung.

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[1] Section 1962(a) and (c) state:

> (a) It shall be unlawful for any person who has received any income derived, directly or indirectly, from a pattern of racketeering activity to use or invest, directly or indirectly, any part of such income, or the proceeds of such income, in acquisition of any interest in, or the establishment or operation of, any enterprise which is engaged in, or the activities of which affect, interstate or foreign commerce.
>
> (c) It shall be unlawful for any person employed by or associated with any enterprise engaged in, or the activities of which affect, interstate or foreign commerce, to conduct or participate, directly or indirectly, in the conduct of such enterprise's affairs through a pattern of racketeering activity[.]

[2] *See* 18 U.S.C. § 1341, 1343.

Mail and wire fraud are both predicate acts of racketeering activity for RICO purposes. 18 U.S.C. § 1961(1). However, SEL argues that the PTO cannot be "defrauded" of approval of patent applications under the federal mail and wire fraud statutes. Specifically, SEL argues that the PTO does not lose money or property when it grants a patent, therefore, in granting a patent, the PTO cannot be the victim of mail or wire fraud.

In support, SEL cites *Mylan Lab., Inc. v. Akzo, N.V.*, 770 F.Supp. 1053, 1071-73 (D.Md.1991). In that case, the RICO plaintiff alleged that the defendants committed predicate acts of fraud against the Food and Drug Administration ("FDA") in obtaining FDA approval of their abbreviated new drug applications ("ANDAs"). The District of Maryland ruled that an unissued license is not property in the government's hands for fraud purposes, therefore, the defendants' conduct before the FDA did not amount to predicate acts under RICO.[3] *Mylan Lab., Inc. v. Akzo,* [476] N.V., 770 F.Supp. at 1072-73. Although the Fourth Circuit reversed a related decision in *Mylan Lab., Inc. v. Matkari, supra.*, it expressly stated "[We affirm a ruling that precludes Mylan from relying on, as its sole basis for the predicate acts in its RICO counts, the theory that the FDA *was* defrauded out of its ANDA approvals within the meaning of the mail and wire fraud statutes." *Mylan Lab., Inc. v. Matkari* 7 F.3d at 1137.

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[3] The court declined to follow the Third Circuit's decision on this issue in *United States v. Martinez*, 905 F.2d 709, 715 (3rd Cir.1990), and instead followed the decisions of the First, Second, Sixth, Seventh, Eighth and Ninth Circuits. *Mylan Lab., Inc. v. Akzo. N.V.* 770 F.Supp. at 1072 (citing, e.g., *McEvoy Travel Bureau, Inc. v. Heritage Travel, Inc.*, 904 F.2d 786, 792-93 (1st Cir.1990). *United States v. Schwartz*, 924 F.2d 410, 417 (2nd Cir.1991), *United States v. Murphy*, 836 F.2d 248, 254 (6th Cir.1988). *Toulabi v. United States*, 875 F.2d 122, 125 (7th Cir.1989) *United States v. Granberry*, 908 F.2d 278. 280 (8th Cir.1990), *United States v. Kato*, 878 F.2d 267, 268-69 (9th Cir.1989)).

In response, SEL argues that *Mylan Lab., Inc. v. Akzo, N.V.* and the cases it cites are distinguishable because they involved licenses, not patents, and patents involve valuable property interests. In addition, Samsung argues that by deceiving the PTO, SEL deprived Samsung and others of the "intangible right of honest services" in violation of the mail fraud statute. *See* 18 U.S.C. § 1346.

Samsung cites no cases which indicate that approval of a patent application by the PTO should be treated differently than approval of an ANDA by the FDA. In both cases, the United States confers certain rights, but it does not forfeit anything. Just as the FDA does not lose money or property when it grants a license, the PTO does not lose money or property when it issues a patent. In addition, Samsung makes no allegations and no evidence indicates that the PTO provided anything less than honest services or that SEL intended for them to provide dishonest services. Furthermore, there is no claim by Samsung that it had an intangible right to SEL's honest services.

Because SEL's alleged conduct before the PTO does not violate the federal mail and wire fraud statutes, that conduct cannot satisfy the predicate acts requirement under RICO. If such conduct could properly be-considered predicate acts, then nearly every inequitable conduct claim in a patent case could be brought as a RICO claim. However, the Patent Act imposes a severe penalty for those who mislead or wrongfully withhold information in an attempt to obtain a patent: all claims in the patent will be rendered unenforceable. *See, J.P. Stevens & Co., Inc. v. Lex Tex, Ltd, Inc.*, 747 F.2d 1553. 1561 (Fed.Cir.1984). Additionally, if Samsung can prove its allegations, not only will the patents at issue be rendered unenforceable, but Samsung may be entitled to attorney's fees pursuant to 35 U.S.C. Section 285. Through these provisions, the Patent Act provides appropriate remedies for

the type of misconduct from which Samsung seeks to recover in its RICO claims.

In its counterclaim, Samsung alleges that SEL's fraudulent acts also include "numerous use of mail and/or wire fraud on Samsung and others[.]" Samsung's Amended Answer and Counterclaim, § 117. However, while the evidence indicates that some companies own licenses to the relevant patents, Samsung has not provided evidence that SEL has committed mail or wire fraud with respect to Samsung or others. Rather, Samsung relies on the theory that SEL's alleged fraud on the PTO satisfies the predicate acts requirement. Because Samsung provides no evidence on which a jury could reasonably find the predicate acts necessary to sustain a RICO claim, SEL is entitled to summary judgment on this issue.

The New Jersey RICO statute is modeled after the federal statute, *State v. Ball*, 141 N.J. 142, 661 A.2d 251, 258 (1995), and the relevant sections, 2C:41-2(a) and (c), require proof of a pattern of racketeering activity. Samsung relies on the same predicate acts in support of its New Jersey RICO claim. Because those acts do not support a federal RICO violation, they fail to support a New Jersey RICO violation.

In addition, Samsung fails to satisfy the "enterprise" element of Section 1962(c). Samsung argues that the RICO enterprise consists of SEL, Dr Shunpei Yaznazaki (SEL's president), and Gerald Ferguson (SEL's patent attorney) However, the Fourth Circuit has ruled that under Section 1962(c), the RICO enterprise and the defendant must be distinct. *Palmetto State Med. Ctr., Inc. v. Operation Lifetime*, 117 F.3d 142, 148 (4th Cir.1997).

Samsung contends that SEL, Yamazaki, and Ferguson should be considered separate entities because each had a duty to the PTO, and Yamazaki and Ferguson committed independent acts of fraud on the PTO. However, "[B]y alleging a RICO enterprise that consists merely of a corporate defendant associated with its own employees or agents carry-

ing on the regular affairs of the defendant, the distinctness requirement may not be circumvented." *Riverwoods Chappaqua Corp. v. Marine Midland Bank, NA.*, 30 F.3d 339, 344 (2nd Cir.1994) (citations omitted); *see also Disccm, Inc. v. NYNEX Corp.*, 93 F.3d. 1055, 1063 (2nd Cir.l996Xattorneys acting on behalf of corporation are agents under *River-woods Chappaqua Corp.).*

SEL generates its income by obtaining and licensing patents. It does not manufacture or distribute any products. Samsung does not argue that Yamazaki or Ferguson acted beyond the scope of their agency when they committed the alleged misconduct. Therefore, because the RICO enterprise is not distinct from the RICO defendant in this case, SEL is entitled to summary judgment on Samsung's Section 1962(c) claims.

For these reasons, Samsung fails to make a showing sufficient to establish the existence of the essential elements of its RICO claims. Accordingly, SEL's Motion for Summary Judgment on Samsung's Racketeering Counterclaims is GRANTED.

An appropriate Order granting summary judgment in favor of SEL on Counts Six, Seven, Eight, and Nine of Samsung's counterclaim shall issue.

ORDER

In accordance with the accompanying Memorandum Opinion, it is hereby Ordered that:

1) Plaintiff Semiconductor Energy Laboratory Co., Ltd.'s Motion for Summary Judgment on Defendants Samsung Electronics Company, Samsung Electronics America, and Samsung Semiconductor, Inc.'s RICO Counterclaim is GRANTED as to Counts Six, Seven, Eight, and Nine; and

2) the Clerk shall forward copies of this Order and accompanying Memorandum Opinion to all counsel of record.

APPENDIX F

(Initial UnenforceabilityRuling, 4 F.Supp.2d 477-97)

UNITED STATES DISTRICT COURT,
E.D. VIRGINIA

C.A. No. 96-1460-A.
APRIL 15, 1998.

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff.

v.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., and SAMSUNG SEMICONDUCTOR, INC.,
Defendants.

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[479] MEMORANDUM OPINION

ELLIS, District Judge.

In this patent infringement action, plaintiff Semiconductor Energy Laboratory Co. ("SEL") alleges that defendants Samsung Electronics, Samsung Electronics America, and Samsung Semiconductor, (collectively "Samsung") made or sold active matrix display units that infringe SEL's U.S. Patent No. 5,543,636 ("the '636 patent"). Among its defenses to SEL's charge of infringement, Samsung alleges that the '636 patent is unenforceable owing to SEL's inequitable conduct before the Patent and Trademark Office ("PTO"). Between March 17, 1998 and April 3, 1998, a seven-day bench trial was held on Samsung's affirmative defense of inequitable conduct, during which time the Court heard fact and expert opinion testimony from several witnesses, admitted into evidence numerous exhibits, and considered the parties' written and oral arguments. This Memorandum

Opinion sets forth the Court's findings of fact and conclusions of law, as announced from the bench pursuant to Fed.R.Civ.P. 52(a). But, to begin with and before listing the detailed findings and conclusions, it is useful as context to describe briefly the parties, the pertinent patents, and the genera] law of inequitable conduct. Indeed, the settled legal principles of the doctrine of inequitable conduct are the lens through which the factual record must be examined and weighed.

I.

SEL is a Japanese research and development company that specializes in semiconductor technology. Over the past eighteen years, SEL has filed over 5,000 patent applications worldwide, and has been awarded approximately 1,500 U.S. and foreign patents for its inventions. Dr. Shunpei Yamazaki, the president and majority shareholder of SEL, is the inventor or co-inventor on most of SEL's patents, including the '636 patent.

SEL filed its application for the '636 patent, titled "Insulated Gate Field Effect Transistor," on June 7, 1995, and the patent issued on August 6, 1996. SEL is the owner of the '636 patent. The asserted claims of the '636 patent (claims 1-3 and 5) are generally directed to a thin film transistor ("TFT"), a type of insulated gate field effect transistor ("IGFET") used in active matrix display units. Active matrix displays, which are commonly used as screens in laptop computers, have thousands of pixels that create a picture or image. The pixels are turned on and off by TFT's. The invention claimed in the '636 patent is a TFT with a semiconductor layer made of intrinsic amorphous silicon having a channel region sandwiched between a silicon nitride gate insulator and another insulator, wherein the concentration of impurities (*e.g.*, carbon and oxygen) in the channel region are 5×10^{18} atoms/cm or less. It is the combination of the specific structure together with the low impurity levels that constitutes the invention.

In October 1996, SEL brought this infringement action against the Samsung defendants, a group of companies engaged, *inter alia*, in the manufacture and sale of active matrix displays as well as laptop computers containing active matrix displays. Specifically, SEL's complaint alleges that the active matrix display units made and sold by Samsung infringe the '636 patent. Initially, SEL's complaint also included claims for in fringement of U.S. Patent Nos. 5,349, 204 ("the '204 patent") and 5,521,400 ("the '400 patent"). However, on March 4, 1998, an agreed order was entered withdrawing the '204 and the '400 patents from the action, thereby leaving the '636 patent as the sole remaining patent-in-suit.

[480] Samsung alleges, as an affirmative defense, that the '636 patent is unenforceable owing to SEL's inequitable conduct before the PTO in connection with three separate patent applications: (i) the application for the '636 patent itself; (ii) the application for U.S. Patent No. 5,315,132 ("the '132 patent"); and (iii) the application for the '204 patent.

The relationship of these patents to each other is pertinent to the disposition of the issue at bar. In this regard, the genealogy of the '636 and '132 patents is well illustrated in SEL's Exhibit No. 432, which is attached to this Memorandum Opinion as an appendix. In essence, the '132 patent is antecedent to, in the direct priority chain of the '636 patent. Specifically, the '636 patent resulted from continuation and divisional applications from the application that issued as the '132 patent. The priority date of the '636 patent thus relies on the chain of applications that includes the '132 patent. Further, because the subject matter of the '636 patent is so closely related to the '132 patent, a terminal disclaimer was filed with respect to the '636 patent, giving it

the expiration date of the '132 patent.[1] Both the '132 and the '636 patents rely upon the May 18, 1984 filing date for SEL's Japanese laid-open Application No. 59-100250 ("the '250 application"), which has a "one-to-one" relationship with both the '132 and the '636 patents. Both patents have the same inventor (Dr. Yamazaki), owner (SEL), disclosure, specification, and title. The '132 patent issued on May 24, 1994, resulting from an application that was filed on December 8, 1992.

The '204 patent is not a part of the '250 application-'132-'636 chain. Yet, like the '636 patent, the '204 patent claims an invention related to low levels of impurities, contains similar prior art references, and was prosecuted at roughly the same time as the '636 patent. Specifically, the '204 patent issued on September 20, 1994, based on an application filed on December 7, 1993.

In support of its inequitable conduct defense, Samsung alleges that SEL made deliberate, material misrepresentations to, and withheld material prior art references from, the PTO during its prosecutions of these three applications. The specifics of these allegations for each patent are set forth as a preface to the findings for that patent. In essence, Samsung argues that SEL's misconduct during each of these three patent prosecutions is sufficient to render all of the claims of the '636 patent unenforceable for the life of the patent.

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[1] In this regard, the 132 patent also claims a TFT with the same low levels of impurities as are claimed in the '636 patent. As Dr. Yamazaki testified during the hearing, the "essential nature of the ['636 & '132] invention[s]" is the same. The difference between the two patents is that the asserted claims of the '636 patent are narrower than the claims of the '132 patent. For example, the '132 patent is not limited to an IGFET with a *silicon nitride* gate, or an *intrinsic* silicon layer, while the claims of the '636 patent are so limited.

II.

It is fundamental that all applicants for patents have a duty to prosecute patent applications in the PTO with candor, good faith, and honesty. *See Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co.*, 324 U.S. 806, 818, 65 S.Ct. 993, 89 L.Ed. 1381 (1945). The vital importance of this duty cannot be overstated. Without it, the edifice of patent law cannot stand. Indeed, the cornerstone presumption of an issued patent's validity, and the placement of a heavy burden on the infringer to show invalidity, both rest on the proper fulfillment of this duty.

A breach of this duty of candor, good faith, and honesty constitutes inequitable conduct,[2] and renders all claims of the patent involved unenforceable. *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178 (Fed.Cir.1995). And inequitable conduct includes "affirmative misrepresentation of a material fact, failure to disclose material in formation, or submission of false material information, coupled with an intent to deceive." *Id.* The party raising the affirmative defense of inequitable conduct must offer clear and convincing evidence that the conduct is both material and intended. *See id.*[3] More specifically, the doctrine of inequitable conduct requires the trial court to undertake a two-step analysis. *See Halliburton Co. v. Schlumbeger Tech. Corp.*, 925 F.2d 1435, 1439 Fed.Cir.1991). First, the court must discern whether the withheld references or misrepresentations satisfy a threshold

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[2] Inequitable conduct is simply "the unclean hands doctrine applied to particular conduct before the PTO." *Consolidated Aluminum Corp. v.Foseco Int'l Ltd.*, 910 F.2d 804, 812 (Fed.Cir.1990).

[3] Clear and convincing evidence is evidence "which proves in the mind of the trier or fact 'an abiding conviction that the truth of [the] factual contentions [is] "highly probable." ' " *Intel Corp. United States Int'l Trade Comm'n* 946 F.2d 821, 830 (Fed.Cir.1991) (quoting *Colorado v. New Mexico*. 467 U.S. 310, 316, 104 S.Ct. 2433, 31 L.Ed.2d 247 1984)).

level of materiality. *See Id.* The court must also determine whether the applicant's conduct in this regard satisfies a threshold showing of intent to mislead. *See id.*[4] Next, assuming satisfaction of the thresholds, "the trial court must balance materiality and intent. . . . The more material the omission [or misrepresentation], the less culpable the intent required, and vice versa." *Id.* Finally, an equitable judgment must be made that, "in light of all the particular circumstances, the conduct of the patentee is so culpable that its patent should not be enforced." *LaBounty Mfg., Inc. v. United States Int'l trade Comm'n,* 958 F.2d 1066, 1070 (Fed.Cir.1992).

Materiality is defined at 37 C.F.R. § 1.56 (Rule 56), and, as the Federal Circuit teaches,[5] this is the starting point in the materiality analysis. Thus, since 1992,[6] Rule 56 has provided, in pertinent part, as follows:

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[4] It is worth noting that a finding of gross negligence itself is insufficient to satisfy the intent threshold. *See Tom Kingsdown Med. Consultants Ltd. v. Hollister Inc.*, 863 F.2d 807, 876 Fed.Cir. 1988). At the same time however the precise content of the intent "threshold" remains essentially undefined. In any event, the defense of inequitable conduct will not succeed in rendering a patent unenforceable unless it is shown by clear and convincing evidence that the offending conduct was material and done with an intent to deceive.

[5] *See Critikon, Inc. v. Becton Dickinson Vascular Access, Inc.*, 120 F.3d 1253, 1257 (Fed.Cir.1997).

[6] Prior to the 1992 amendment, Rule 56 defined information as material when "there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." 37 C.F.R. § 156 (1989). The Federal Circuit has not discussed the meaning of the new Rule 56 which appears narrower, i.e., less information is defined as material, than the former version of Rule 36. Nevertheless, the new (1992) version of Rule 36 does not purport to alter the previously settled principle that a "but for" test is inappropriate determinations of materiality. *See Merck & Co., Inc. v. Dambury Pharmacal Inc.*, 373 F.2d 1418, 1421 (Fed.Cir.1989) (rejecting "but for"

information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim:[7]

or

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standard of materiality under pre-1992 Rule '56). In other words, Materiality does not require a finding that "but for" the inequitable conduct, the patent would not have issued.

Also worth noting is that the new version of Rule 36 does not refer to a hypothetical reasonable examiner or to any standard for an examiners competence. Application of the new rule does not require the use of any such standard. In any event, it is clear that patent examiners are not presumed to be omniscient, *i.e.*, to know all the prior art. together with its relevance and significance. Were this not so, there would be no need for a duty of disclosure of prior art. But this duty is vital given that patent prosecution proceedings are typically ex parte. and examiners, while technically skilled, are not omniscient. Consistent with this, examiners are properly characterized as "quasi-judicial officials trained in the law and presumed to 'have some expertise in interpreting the [prior art] references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.' " *Markman v. Westview Instruments*, Inc., 52 F.3d 967. 986 (Fed.Cir.1995) (quoting *American Hoist & Derrick Co. v.* Sowa & Sons, *Inc.*, 725 F.2d 1350, 1359 (Fed.Cir.1984)). Thus, examiners are skilled in the art insofar as they are technically competent to understand information and references in some technical or scientific field, but they are not of ordinary skill in the art to the extent that this might imply that they are aware of all the pertinent prior art.

[7] Rule 56 further provides that "[a] prima facie ease of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patent ability." 37 C.F.R. § 1.56(6).

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

Thus, under the new Rule 56, materiality is phrased in terms of whether a misrepresentation, if corrected, or an omitted reference, if disclosed, would, itself or together with other information, give rise to a *prima facie* (*i.e.*, rebuttable) case of unpatentability. If so, the omitted reference or misrepresentation is material. But this is not the only test of materiality. The omitted reference or misrepresentation may also be material if it refutes or is inconsistent with the applicant's patentability arguments.

Whether a withheld reference or omitted information is cumulative plays a prominent role in this case. Thus, it is important to note that while cumulative information is not material under Rule 56, a withheld reference may be highly material when it discloses a more complete combination of relevant features, even if those features are before the patent examiner in other references. *See, e.g., Molins*, 48 F.3d at 1180; *LaBounty*, 958 F.2d at 1075-76; *In re Jerabek*, 789 F.2d 886, 890 (Fed.Cir.1986). Thus, where, as here, the invention is a combination of elements, an undisclosed prior art reference that contains more of the combined elements than the disclosed references is not cumulative simply because various elements of the invention appear in other disclosed references.

Inequitable conduct requires more than mere materiality of the withheld or misrepresented reference or information; it also requires an intent to act inequitably. And no presumption of intent to deceive arises merely from the materiality of an undisclosed reference. *See Halliburton*, 925 F.2d 1435, 1442. Even gross negligence "does not of itself justify an inference

of intent to deceive." *Id.* Rather, such conduct "can support an inference of intent only when, 'viewed in light of all the evidence, including evidence indicative of good faith,' the conduct is culpable enough 'to require a finding of intent to deceive.' " *Id.* (quoting *Kingsdown*, 863 F.2d at 876). Yet, it is also true that a patentee facing a "high level of materiality and clear proof that it knew or should have known of that materiality, can expect to find it difficult to establish 'subjective good faith' sufficient to prevent the drawing of an inference of intent to mislead." *Critikon*, 120 F.3d at 1257. In such circumstances, a "mere denial of intent to mislead (which would defeat every effort to establish inequitable conduct) will not suffice." *Id.*

The test, then, requires a consideration of, and a judgment on, the totality of the circumstances. In the words of the Federal Circuit, courts must determine whether the conduct "in its totality manifests a sufficiently culpable state of mind to warrant a determination that it was inequitable." *Molins*, 48 F.3d at 1181. This sensible formulation recognizes that direct proof of intent is rarely available and that it is impossible to scrutinize directly the workings of the human mind.

It is against these general legal principles that Samsung's claims of inequitable conduct must be assessed. Thus, analysis of Samsung's claims will proceed by an initial assessment as to the materiality of any withheld or mischaracterized information during SEL's prosecution of the '636, '132, and '204 patent applications. An assessment of SEL's intent will follow.

III.

A. The '636 Patent Application

Samsung alleges two specific instances of inequitable conduct by SEL during its prosecution of the '636 patent. First, SEL submitted to the PTO as prior art the Japanese laid-open Application No. 56-135968, assigned to Cannon K.K.

("the Canon '968 application"), which is also directed to TFT's. Specifically, SEL submitted the full 29-page Japanese language version and a one-page partial English translation of the Canon '968 application. Samsung contends that by highlighting, through translation, only one of the many elements in the Canon reference that was relevant to the '636 application, and by leaving the others untranslated, SEL deliberately mischaracterized the importance of Canon and attempted to conceal material information from the examiner. Second, SEL also revealed as prior art a 1983 article by Dr. CC. Tsai titled "Amorphous Si Prepared in a UHV Plasma Deposition System," which teaches the reduction of impurities in amorphous silicon to improve performance in electronic devices. SEL distinguished the Tsai article before the PTO by claiming that it applied primarily to solar cells and not TFT's, and by stating that the current in the devices discussed in the article runs in a perpendicular direction, while the current in the type of TFT's referred to in the '636 patent runs in a parallel direction. Samsung alleges that SEL's statements in this regard were disingenuous attempts to distinguish the Tsai article from the '636 patent application, and that they were contrary to its own knowledge and inconsistent with its own position in other patent applications.

1. The Canon '968 Application

On November 15, 1993, in connection with its '636 patent application, SEL disclosed approximately 90 references of prior art to the PTO, including the Canon '968 application. SEL submitted the full 29-page Japanese language version of the Canon '968 application to the PTO, but not a full English translation. Instead, it submitted a one-page document titled "Partial Translation of JP-Laid Open 56-135968:" which selectively translated for the PTO sections of the application appearing both before and after the untranslated portions of the Canon '968 application. Dr. Yamazaki testified that the

partial translation had already been prepared in connection with another patent application, and that he made the decision that only certain portions of the Canon '968 application should be translated and submitted to the PTO together with the full Japanese language version in connection with the '636 application.

The partially translated portion of the Canon reference discloses a silicon nitride gate insulator, one of the elements of the asserted claims of the '636 patent. Dr. Yamazaki testified that at the time he submitted the partially translated Canon '968 reference, the silicon nitride gate insulator was the only disclosure in the Canon '968 application that he believed to be relevant to the '636 patent. Indeed, when he disclosed the Canon '968 application to the PTO, he identified its relevance only as "disclos[ing] the use of silicon nitride for a gate insulating layer of a thin film transistor."

Yet, this was not accurate; the untranslated portions of the Canon '968 application 'were also relevant to a consideration of the patentability of the invention claimed in the '636 patent. In general, these portions were (a) the frequent admonitions to prevent or limit atmospheric impurities in semiconductor materials[8] which provide an express suggestion to employ teachings such as those found in the Tsai article or the '423 or the '488 applications[9] to reduce carbon, oxygen and nitrogen impurities below the levels claimed in the '636 patent, and (b) a description of the same structure for a thin film transistor as is described in the '636 patent. More specifically, the untranslated portion of the

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[8] In this regard, and indeed generally, the Court credits the testimony of Samsung's witnesses Dr. Fonash, Dr. Tsai, and Dr. Meyerson over SEL's witnesses Dr. Lucovsky, Dr. Yamazaki whenever there is a conflict.

[9] That is SEL's Japanese laid-open Application No. 59-33423 "the 423 application" 59-33488 ("the 488 application"), which were laid open (published in Japan) on February 27, 1984.

Canon '968 teaches avoiding exposure of the channel region to impurities resulting from air or oxygen. Further, the untranslated portion teaches the cleaning of the substrate by etching part of it away, prior to depositing the amorphous silicon. Further, it teaches that the substrate can introduce impurities, and that washing alone is insufficient to avoid impurities. Although other prior art disclosed by SEL during the prosecution of the '636 patent, such as the Tsai article,[10] teach avoidance of impurities, none [484] disclose or teach the processing sequence useful in avoiding impurities, such as etching the substrate. The translated portion of the Canon '968 application submitted by SEL to the PTO omitted this teaching.

It is also significant that the translated portion of the Canon '968 application describes a TFT structure that is somewhat different from that described in the '636 patent, whereas the structure described in the untranslated portion of the Canon '968 application describes the same structure found in the '636 patent. Thus, the structure described in the untranslated portion of the Canon '968 application has the same intrinsic semiconductor layer made from amorphous silicon; the same channel region sandwiched between the insulators; and (in both the translated and the untranslated portions), the same silicon nitride gate insulator as claimed in the '636 patent. To be sure, other references cited to the PTO disclose the various elements described in the '636 patent claims. Yet, no other reference before the examiner contained as complete a combination of the '636 elements as is disclosed in the untranslated Canon '968 application.

Thus, contrary to SEL's contention, Dr. Fonash's testimony convincingly establishes that the untranslated

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[10] Findings relating both to the nature of the Tsai article and to Dr. Yamazaki's and SEL's knowledge of it are set forth in the following sections.

portions of Canon are not merely cumulative, as they contain a more complete combination of the elements-the intrinsic amorphous silicon, the silicon nitride gate insulator, and the admonition to avoid impurities—that are claimed in the '636 patent itself.[11] Dr. Fonash further convincingly testified that the untranslated portions of the Canon '968 application and the Tsai article, taken together, would disclose a device having every element of the asserted claims of the '636 patent. As Dr. Fonash put it, a fully translated Canon '968 application provides a "good blueprint" for making the exact device described in the '636 patent, and additionally provides the admonition to avoid impurities. The Tsai article, discussed *infra* in more detail, discussed amorphous silicon films with specific low levels of impurities within the claim limitations of the '636 patent. Thus, Dr. Fonash concluded that the fully translated Canon '968 application, when taken together with the Tsai article, renders obvious the asserted claims of the '636 patent. Moreover, he concluded that failing to disclose the untranslated portions of the Canon application would significantly hinder a patent examiner's ability to determine whether the '636 patent application was an unobvious advancement over the prior art. In a grudging admission of this, Dr. Yamazaki testified during the inequitable conduct hearing that submitting a complete translation of the Canon '968 application would have been a "kinder thing" for him to do, and that a full translation "would be more convenient" for the PTO.

Accordingly, the evidence is clear and convincing that untranslated portions of the Canon '968 application contained information highly material to the prosecution of the '636 patent application as they, together with other information, establish a *prima facie* case of unpatentability. *See* 37 C.F.R.

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[11] Worth nothing in this regard is that Dr. Yamazaki acknowledged his duty to provide the PTO with prior art references "most simlar to" his claimed invention.

§ 1.56. The evidence is also clear and convincing that the fully translated Canon '968 application was knowingly withheld from the PTO.

2. The Tsai Article

In the course of prosecuting the application that led to the issuance of the '636 patent, SEL disclosed to the PTO as prior art a 1983 article by Dr. Tsai titled "Amorphous Si Prepared in a UHV Plasma Deposition System." This article teaches the reduction of impurities in amorphous silicon to improve performance in electronic devices.

During the prosecution of the '636 patent application, SEL sought to distinguish the Tsai article before the PTO by suggesting that it applied primarily to solar cells rather than to TFT's. Further, SEL argued before the PTO that the Tsai article was distinguishable in that the electrical current in the devices discussed in her article runs in a perpendicular direction, while the electrical current in the TFT's referred to in the '636 patent runs in a parallel direction. At the inequitable conduct hearing, SEL, through the testimony of Dr. Yamazaki, expressed the view that impurities such as carbon and oxygen affect solar cells differently from TFT's and create different problems in the two devices. Thus, SEL asserted both before the PTO and in the course of this hearing, that teachings concerning the effects of impurities in solar cells are not relevant to TFT's.

The record as a whole discloses that SEL's efforts to distinguish the Tsai article before the PTO were neither valid nor accurate. Thus, Dr. Tsai testified convincingly that her article, which refers to "large area devices," would have been understood by those in the field, both at the time of its publication and thereafter, to include devices made with TFT's as well as solar cells. Dr. Fonash agreed, testifying that in 1983 at the time the Tsai article was published, he understood the term "large area device" to include devices

made with TFT's. Dr. Yamazaki also testified that the current active matrix display units that utilize TFT's are large area devices. In sum, the expert testimony convincingly establishes that contrary to SEL's representation to the PTO, the Tsai article would have been understood by persons of ordinary skill in the art in 1983 and thereafter to apply not just to solar cells, but to TFT's as well.

Record evidence reflects that Dr. Yamazaki, a distinguished and accomplished solid state physicist, surely knew this. Thus, his '423 and '488 Japanese laid-open applications, which deal mainly with solar cells, expressly state that the benefits of the lower levels of impurities described in those applications also apply to insulated gate field effect semiconductor device[s]" such as TFT's. So, as the '423 and the '488 laid-open applications reflect, Dr. Yamazaki recognized by 1984 a clear connection between solar cells and TFT's in that the importance of reducing impurity levels is applicable to both. Moreover, SEL was prosecuting the '400 patent application, one of the original patents-in-suit, at approximately the same time it was prosecuting the '636 patent application. The 400 patent, which is also directed mainly to solar cells, contains a figure (figure 9) that illustrates that the invention applies to insulated gate field effect transistors, as well.

In summary for the limited purpose of trying to persuade the examiner that the Tsai article was not material, SEL adopted a position contrary to its own knowledge, and inconsistent with its own previously stated position on an important issue before the PTO. Specifically, in its '423, '488, and '400 patent applications, SEL asserts that its claimed inventions, which are primarily directed to reducing impurities in solar cells, are equally applicable to TFT's. Yet, in its prosecution of the '636 patent application, SEL distinguished the Tsai article on the basis that its teachings apply primarily to solar cells, not TFT's. Thus, contrary to the

clear statements found in the '423, '488, and '400 applications, SEL argued before the PTO, in effect, that references concerned with the effects of impurities in solar cells are not germane to a TFT's patentability. SEL never revealed this inconsistency to the PTO as required under 37 C.F.R. 1.56.

Next, convincing expert testimony also contradicts SEL's representation to the PTO that the Tsai article is distinguishable based on the direction of the current. Thus, Dr. Tsai and Dr. Fonash persuasively testified that it is irrelevant to the effect of impurities in a device as to whether current runs perpendicular or parallel. Accordingly, it is clear from this record that the difference in the direction of current flow was not a valid basis for distinguishing the Tsai article from the '636 patent application. Moreover, Dr. Yamazaki, as an accomplished solid state physicist, was certainly aware that this was a distinction without significance as well.

Knowledge that the teachings of the Tsai article were equally applicable to TFT's was material to the prosecution of the '636 patent application. The expert testimony of Dr. Fonash clearly established that the Tsai article teaches the making of amorphous silicon with impurity concentrations in the amorphous silicon layer within the levels recited in all claims of the '636 patent. The deposition testimony of Dr. Lucovsky confirms this conclusion. Further, as the testimony of Dr. Fonash convincingly establishes, the Tsai article, taken together with the untranslated portions of the Canon '968 application, disclose a device having every element of the [486] asserted claims of the '636 patent.[12] Thus, the clear and convincing evidence demonstrates that the Tsai article, taken

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[12] The Tsai article's materiality to the '636 patent is confirmed by Dr. Yamazaki's own January 1995 letter to his licensing agent, in which he acknowledges the Tsai article as being highly relevant to the '132 patent, which, like the '636 patent, is directed to TFT's, not solar cells.

together with other information, would give rise to a *prima facie* case of unpatentability, and was therefore highly material to the prosecution of the '636 patent application. Equally clear and convincing is that SEL knowingly mischaracterized the article as not relevant to TFT's, the subject matter of the '636 invention.

B. The '132 Application

Samsung asserts that during the prosecution of the '132 patent application, SEL made a material misrepresentation regarding information disclosed in a prior art reference, and additionally failed to disclose at least three material prior art references. Specifically, SEL represented to the PTO that the levels of impurities recited in a prior art reference, U.S. patent No. 4,766,477 issued to Nakagawa ("the Nakagawa '477 patent"), was 4×10^{19} atoms/cm^3 when the correct value was approximately eight times lower. Samsung alleges that SEL deliberately misrepresented the figure in order to distinguish the '636 patent from the Nakagawa '477 patent. Further, Samsung contends that SEL deliberately withheld at least three material prior art references, namely (1) the 1983 Tsai article "Amorphous Si Prepared in a UHV Plasma Deposition System," (2) the '423 laid-open application, and (3) the '488 laid-open application.

A threshold issue is the relevance of any inequitable conduct by SEL in connection with its prosecution of the '132 patent application. Samsung contends that where inequitable conduct is found in an application that results in an issued patent, all subsequent patents relying on the same chain of priority, whether from divisional or continuation applications, must also be held unenforceable, whether or not the applicant's inequitable conduct continued during the subsequent application. Thus, Samsung invites the Court to hold that inequitable conduct during SEL's prosecution of the

'132 patent application necessarily renders unenforceable all the claims of the '636 patent.

This argument requires an extension of existing law. To date, no Federal Circuit case has squarely decided this issue, although there is supporting Federal Circuit dictum, [13] and supporting district court case law, [14] upon which Samsung

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[13] *See Fox Indus., Inc. v. Structural Preservation Sys.*, 922 F.2d 801, 804 (Fed.Cir.1990) (stating that inequitable conduct "early in the prosecution may render unenforceable all claims which eventually issue from the same or a related application"); *see also Consolidated Aluminum*, 910 F.2d at 810-11 (inequitable conduct in procuring one patent-in-suit may render related patents-in-suit unenforceable where the inequitable conduct has an "immediate and necessary relation" to the equity patentee seeks, namely enforcement of the related patents).

[14] *See Baxter Int'l. Inc. v. McGaw, Inc.*, 958 F.Supp. 1313, 1315—17 (N.D.Ill.1997) (Inequitable conduct in original application which gave rise to multiple divisional applications resulted in all three resulting patents being held unenforceable, even when inequitable conduct did not affect the claims of one of the resulting patents); *Jack Frost Lab., Inc. v. Physicians & Nurses Mfg. Corp., 901 F.Supp. 718 729 (S.D.N.Y. 1995)* Inequitable conduct in original application that resulted in issued patent also made later patent resulting from continuation application unenforceable); *Golden Valley Microwave Foods, Inc. v. Weaver Popcorn Co., Inc.*, 837 F.Supp. 1444, 1478 (N.D.Ind.1992) (Inequitable conduct in prosecution of original application that resulted in issued patent could not be purged in continuation application, and therefore, subsequent patent in the same chain held unenforceable); *Molins PLC v. Textron, Inc.*, 821 F.Supp. 1551, 1581 (D.Del.1992) *aff'd*, 48 F.3d 1172, 1187 (Fed.Cir. 1995) (Inequitable conduct in original application that resulted in an issued patent likewise rendered later patent issued from a divisional application unenforceable); *East Chicago Mach. Tool Corp. v. Stone Container Corp.*, 181 U.S.P.Q. 744, 748 (N.D.Ill.1974), *vacated in part*, 185 U.S.P.Q. 210 (N.D.Ill. 1974) (Where inequitable conduct was committed in the original application, all patents stemming from it, whether resulting from continuation or divisional applications, are unenforceable for inequitable conduct regardless of whether the inequitable conduct relates to any of the issued claims in the subsequent patents).

Closely read, none of these cases is precisely on point factually; none involves, as here, misrepresentations or nondisclosure made with respect

relies. In the [487] final analysis, however, this issue need not be reached, as SEL's inequitable conduct during its prosecution of the '636 patent application is sufficient to render the claims of the '636 patent unenforceable. Nevertheless, given the close relationship between the '636 and the '132 patents,[15] any inequitable conduct by SEL during its prosecution of the '132 is still relevant to show plan, motive, intent and pattern and practice under Rules 402, 403, & 404(b), Fed.R.Evid.[16]

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to an earlier patent in a chain, but not repeated in connection with the later challenged patent in the chain. Instead, the cited cases generally involve misconduct with respect to an earlier patent that is repeated and hence permeates. In a sense, the prosecution of the later, elated patent, *See*, e.g., *Jack Frost*, 901 F.Supp. at 718; *Golden Valley*. 837 F.Supp. at 1444; *but cf. Baxter*, 958 F.Supp. at 1315-1318 inequitable conduct committed during original application not repeated during prosecution of subsequent, divisional application).

[15] Again, the '636 patent resulted from continuation and divisional applications from the application that issued as the 132 patent. See appendix. Because the subject matter of the two patents is so closely related, a terminal disclaimer was filed, giving the 636 patent the expiration date of the '132 patent.

[16] It is worth emphasizing the distinction drawn here between relying on inequitable conduct relating to the '132 patent as an independent basis for holding the '636 patent unenforceable which is not the course followed here, and relying on inequitable conduct relating to the '132 patent as evidence that may aid in the determination of SEL's intent with respect to conduct relating to the prosecution of the '636 patent application. The latter course is followed here. In other words, this Memorandum Opinion proceeds on the basis that conduct related to the prosecution the '636 is the sole basis for a finding of inequitable conduct, but that conduct relating to the '132 is relevant and probative as it provides important context, given the close relation of the patents and as it sheds light on the intent underlying the conduct relating to the prosecution of the 636 patent.

A further digression on this subject is warranted. Although there do not appear to be any Federal Circuit decisions involving or applying Rule 404(b), Fed.R.Evid., there can be little doubt that it is as applicable in patent litigation as in other litigation contexts. See Arcade, Inc. v. Minnesota Mining and Mfg. Co., 24 U.S.P.Q.2d 1578, 1589 (E.D.Tenn.

1. The Nakagawa '477 Patent

During SEL's prosecution of the '132 patent application, the PTO originally rejected some of its claims relating to low levels of impurities based on the same or similar impurity levels described in the Nakagawa '477 application. In response, SEL, in an amendment filed on May 25, 1993. argued that the rejected '132 claims should be allowed over the Nakagawa application because the '132 claimed a lower level of impurities. To prove this vital point, the amendment submitted to the PTO included a calculation premised on an incorrect, overstated figure for the atomic density of amorphous silicon. Specifically, the figure used was 4×10^{23} atoms/cm^3, which was approximately eight times higher than the correct value of 5×10^{22} atoms/cm^3. The result of using this artificially inflated figure was that SEL's calculation of the level of impurities disclosed in the Nakagawa '477 patent, 4×10^{19} atoms/cm^3 was also approximately eight times higher than the figure actually disclosed in the Nakagawa '477 patent. Thus, the impurities range claimed in the '132 patent, namely 5×10^{18} atoms/cm^3 or less, appeared lower than that disclosed and claimed in the Nakagawa '477 patent. On this basis, the examiner allowed the previously rejected claims in the '132 patent over the Nakagawa reference.

1991) (finding prior inequitable conduct to he 404(b) evidence from which to infer intent to deceive during later patent prosecutions). Yet, because the inequitable conduct defense is so often frivolously pied, *see Burlington Indus., Inc. v. Davco Corp.*, 849 F.2d. 1418, 1422 (Fed.Cir. 1988) (characterizing the practice of charging inequitable conduct in almost every patent case as "an absolute plague"), district courts must take care to ensure that assertions of the defense of inequitable conduct plus reliance on Rule 404(b) do not become a license for a fishing expedition into a patentee's files concerning related patents and applications. Discovery of such files should not be allowed absent a significant threshold showing of inequitable conduct and relevance with respect to the patent-in-suit.

Dr. Yamazaki testified that the incorrect silicon atomic density figure provided to the PTO was the result of a careless error by Mr. Kunitaka Yamamoto, SEL's in-house patent representative who was assisting Dr. Yamazaki with the '132 prosecution. Mr. Yamamoto confirmed in his testimony that he had made the error. Yet, no satisfactory explanation was provided by Mr. Yamamoto as to how he arrived at this incorrect figure, [488] or why he was able to provide the correct atomic density figure for silicon in later applications.[17] Mr. Yamamoto merely testified that the mistake occurred because his "memory of the number of [silicon] atoms was incorrect."

Dr. Yamazaki gave conflicting testimony on precisely how he learned of the error. At one point during the hearing, Dr. Yamazaki testified that I.B.M. had pointed out the mistake sometime following a March 1995 licensing meeting. Later, Dr. Yamazaki testified that I.B.M. had not revealed the mistake, but rather that he had discovered the error while preparing for this lawsuit. In any event, it is clear that neither Dr. Yamazaki nor Mr. Yamamoto informed the PTO that an error had been made regarding the silicon density figure provided in connection with the prosecution of the '132 patent. Specifically, Dr. Yamazaki testified that he did not disclose the error when it came to his attention because the '132 patent had already issued. Rather, he thought that it was sufficient that the correct figure had been submitted in connection with SEL's pending prosecution of the '636 patent application.[18] Mr. Yamamoto also testified that he did not

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[17] Specifically, SEL used the correct atomic density figure for amorphous silicon in an April 1995 filing to the PTO in connection with the '636 proceeding, and again later in the same proceeding in a November 15, 1995 filing.

[18] On this point, it is worth noting that Mr. Yamamoto testified that Dr. Yamazaki suggested calling the error to the PTO's attention, but that he, Mr. Yamamoto, essentially vetoed this suggestion. This testimony is flatly

think that he had any obligation to inform the PTO that an error had been made during the prosecution of the then issued '132 patent.[19]

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implausible; the record leaves no doubt that Dr. Yamazaki pays close attention to matters of this sort, and that in all matters relating to his patent applications, Dr. Yamazaki ultimately calls the shots. This fact is made pellucidly clear by Samsung's Exhibit No. 1417, a January 1996 letter from Dr. Yamazaki to his licensing agent explaining Dr. Yamazaki's decision to revoke a power of attorney in connection with the prosecution of Application No. 425,455, an application in the '250 application-'132-'636 chain. See appendix. There, Dr. Yamazaki writes:

> The Revocation was necessary because our view regarding certain prior art references was entirely different from Mr. Ferguson's [SEL's patent attorney] view. That is, after we received a Notice of Allowance, Mr. Ferguson suggested that it was necessary to submit the references to the Patent Office as a duty of disclosure. To do this, a Rule 62 continuation application was necessary. However, contrary to Mr. Ferguson, it was our belief that these references were not more material than the references cited during the prosecution. We and Mr. Ferguson extensively discussed this matter but could not finally reach a conclusion. Mr. Ferguson suggested that even though we (SEL) believed that these references were immaterial, he himself had an obligation to disclose the references as a patent attorney since he believed the references were more relevant than the prior art considered by examiners. In view of the above situation, we decided to file the Revocation of Power of Attorney in order to allow the application to issue as a patent.

There is no doubt, then, that it is Dr. Yamazaki who ultimately determines what information is disclosed to the PTO in connection with his patent applications.

[19] In this regard, Mr. Yamamoto testified that he had read pertinent portions of the Code of Federal regulations and the PTO's Manual of Patent Examining Procedure and understood his duty of candor to the PTO. More specifically, he confirmed his understanding of the duty of candor as encompassing a duty to disclose to the FF0 material information resulting from Japanese patent proceedings, including any material prior art or information cited or brought to his attention in any related foreign application.

The expert testimony of Dr. Fonash established by clear and convincing evidence that disclosure of the correct figure for the density of silicon was highly material to the prosecution of the '132 patent application. Specifically, the PTO originally rejected claims in the '132 patent application based in part on the impurity concentrations disclosed in the Nakagawa '477 application. Yet, as Dr. Fonash testified, the use of an overstated silicon atomic density figure enabled SEL to argue that the '132 patent application claimed a lower level of impurities than the Nakagawa '477 application. Disclosure of the correct silicon atomic density figure, then, would have deprived SEL of this important argument in support of patentability.

2. The Tsai Article[20]

On August 26, 1983, Dr. Yamazaki attended a lecture given by Dr. C.C. Tsai at a [489] technical conference in Tokyo. The lecture dealt with depositing amorphous silicon films with specific low levels of impurities. Significantly, these low impurity levels also fall within the claim limitations of the '132 and the '636 patents. Dr. Yamazaki testified that his work on lowering impurity levels preceded Dr. Tsai's speech, and that he had given a similar speech concerning his own work in reducing levels of impurities at a Reston, Virginia conference in May 1983. He initially testified that he does not remember being particularly impressed with the Tsai speech, given that it followed his own on reducing impurities.[21] He continued that he did not really recall

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[20] This is the same article that SEL mischaracterized as limited to solar cells in connection with its prosecution of the '636 patent application *See supra* Part III(A)(2)

[21] Yet, in a later appearance on the witness' stand, Dr. Yamazaki admitted that Dr. Tsai's presentation at the 1983 Tokyo conference "left an impression" on him because it was a large conference and Dr. Tsai was one of the few women speaker there.

anything in particular about Dr. Tsai's speech, including whether she discussed specific impurity levels. This testimony was not in accord with his testimony at a February 27, 1998 deposition, at which time he characterized his initial impression of Dr. Tsai's speech as being "spectacular." Other experts, including Dr. Meyerson, confirmed that the Tsai article was a path breaking work of great importance.

At the time of the conference, Dr. Yamazaki received an abstract of Dr. Tsai's lecture. Dr. Tsai also testified that she spoke with Dr. Yamazaki following her lecture, and that he asked her for a copy of "Amorphous Si Prepared in a UHV Plasma Deposition System," the article on which her lecture had been based. The Tsai article was in fact published later that year in the Journal of Non-Crystalline Solids, Volume 59 & 60 (1983). Dr. Tsai stated that she directed her secretary to send Dr. Yamazaki a reprint of the article and that it was accordingly sent to him. Further, Dr. Tsai stated that all conference attendees, including Dr. Yamazaki were sent a copy of all conference papers in a bound volume.

During his first appearance at the hearing Dr. Yamazaki testified that he did not recall having a conversation with Dr. Tsai, or requesting a copy of her article at the August 1983 conference. Rather, he only remembered speaking to her for the first time, apparently on an unrelated matter, one year later at a conference in Snowbird, Utah. Further, Dr. Yamazaki testified that he did not remember receiving anything other than the abstract of her speech.[22]

In 1984, Dr. Yamazaki and others submitted an article, also to the Journal of Non Crystalline Solids, which was published later that year. The 1984 Yamazaki article cites to a 1984 article written by Dr. Tsai, which in turn references her 1983 article, "Amorphous Si Prepared in a UHV Plasma

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[22] The abstract alone does not discuss specific impurity levels.

Deposition System." Dr. Yamazaki testified that the portion of his 1984 article that refers to the Tsai publication was written by a co-author, and that he in fact never read the Tsai reference.

Given the sequence of events, and the record as a whole, Dr. Yamazaki's testimony on the Tsai article is neither plausible nor credible. It is simply implausible that Dr. Yamazaki did not review and comprehend the significance of the Tsai article in 1983-4 and thereafter. He testified that he delivered a similar speech on lowering impurities just months before he heard Dr. Tsai's own presentation, a presentation Dr. Yamazaki once described as "spectacular," an assessment consistent with Dr. Meyerson's and Dr. Fonash's. but inconsistent with his (Dr. Yamazaki's) own hearing testimony. Further, Dr. Tsai distinctly remembers speaking with Dr. Yamazaki following her presentation, and granting his request for a reprint of her article. And, Dr. Yamazaki's own 1984 article, although a collaborative work, specifically cites to a Tsai article which itself references her 1983 article. Dr. Yamazaki, as an accomplished physicist with a focused interest in this area and as an experienced inventor with a demonstrated interest in securing patents, had every reason to review and remember Dr. Tsai's article.

Yet, the 1983 Tsai article was not disclosed as prior art during the prosecution [490] the '132 patent. Rather, SEL first disclosed the Tsai article to the PTO in November 1994 in connection with Application No. 214, '494 ("the '494 application"), which was soon thereafter abandoned.[23] At that time, SEL represented to the PTO that the Tsai article had only recently come to its attention. Similarly, Dr. Yamazaki testified at the inequitable conduct hearing that the Tsai article was first called to his attention as relevant prior art to

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[23] See appendix. The Tsai article was also disclosed to the PTO on June 7, 1995 during the prosecution of the '636 patent application.

the '132 patent during licensing negotiations with Toshiba in October, 1994, after the '132 patent had issued. Yet, as already noted, this is simply not credible; the record as a whole reflects that Dr. Yamazaki was well aware of the Tsai article throughout the relevant period.

As was true in the prosecution of the '636 patent, the Tsai article was highly material to the '132 patent application. In a January 1995 letter to his licensing agent for the '132 patent, Dr. Yamazaki himself stated that "we do not think there is a more relevant reference than C.C. Tsai's abstract of August 22, 1983 and his (sic) papers of December 1983, that you know." Despite the admission, Dr. Yamazaki testified at the hearing that the abstract is not in fact relevant. Yet, any attempt by Dr. Yamazaki to rely on a distinction between the abstract and the entire article is unpersuasive. The record as a whole leaves the Court with a clear conviction that Dr. Yamazaki was well aware of the Tsai article throughout the relevant period. And, expert testimony established by clear and convincing evidence that the 1983 Tsai article was highly material. Specifically, Tsai's article teaches the making of amorphous silicon with impurity concentrations in the amorphous silicon layer within the levels recited in all claims of the '132 patent. Dr. Fonash also testified that the Tsai article shows "you in great depth, in greater detail, how to attain those impurity levels, and has data showing how they actually did attain those impurity levels." He further testified that the Tsai article is directed to "large area device applications" which include TFT's.

Claim 7 of the '132 patent is directed to a TFT with low impurities. Accordingly, the evidence clearly and convincingly shows that disclosure of the Tsai article during the prosecution of the '132 patent would have given rise to a *prima facie* case of unpatentability.

3. The '423 and '488 Laid-open Applications

Dr. Yamazaki is the sole inventor on the '423 and the '488 Japanese laid-open applications, which were filed in 1982 and published by the Japanese patent office in 1984. Neither reference was disclosed to the PTO during the prosecution of the '132 patent. The '423 and the '488 laid-open applications have very similar disclosures. The '423 and the '488 are directed to solar cell technology, and specifically to the efficiencies to be achieved in photoelectric devices from low levels of impurities. Both laid-open applications conclude, however, that the "present invention is also effective for an insulated gate field effect semiconductor device having an NIN junction *(i.e.,* a junction comprising, in this order, a source or drain, a channel forming region, and a source or drain) or a PIP junction, as well as for a transistor having an NIPIN or a PINIP junction." [24] It is clear, therefore, that Dr. Yamazaki himself knew and believed that the '423 and '488 laid-open applications, though directed to solar cells, were also pertinent to TFT's.

Yet, Dr. Yamazaki testified during the hearing that he forgot that the '423 and '488 applications taught lowering impurities in insulated gate field effect semiconductor devices, and therefore he did not disclose them to the PTO in connection with the '132 patent prosecution. Specifically, he testified that because the '423 and the '488 dealt chiefly with solar cells, he thought that neither had any relevance to the '132 patent application. This contention is belied by the terms of the '423 and the '488 applications themselves, and by the convincing expert testimony of Dr. Tsai and Dr. Fonash. Most tellingly, though, Dr. Yamazaki's contention is flatly

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[24] Indeed, the claims of the '423 are not limited to solar cells, but also claim semiconductor devices. Also worth noting is that the prosecution application was protracted, extending from 1982 to a rejection on appeal in 1992.

refuted by the fact that SEL referenced other works directed primarily to solar cells during its prosecution of the '132 patent, including one of Dr. Yamazaki's own U.S. solar cells patents, U.S. Patent. No. 4,239,554, and an article by Magee and Carlson in a publication called "Solar Cells." Even if Dr. Yamazaki's testimony that he forgot about the specific passages contained in the '423 and the '488 applications describing their relevance to TFT's were plausible, it is not plausible that he forgot the scientific principle underlying those passages, *i.e.*, that the importance of reducing impurity levels is germane to both solar cells and TFT's.

Dr. Yamazaki also testified that he first became aware of the significance of the '423 and the '488 through a rejection by the Japanese patent office in his corresponding '250 application.[25] The rejection, mailed on October 19, 1994, was based in part on the disclosures in Dr. Yamazaki's '423 laid-open application. Further, Dr. Yamazaki remembered Toshiba representatives suggesting, during licensing negotiations in October 1994, that the '423 and '488 applications were prior art to the '132 patent. Dr. Yamazaki testified that he then looked into the matter. Significantly, Dr. Yamazaki thereafter, in January 1995, told his licensing agent that he considered the '423 and the '488 references to be more material to the '132 patent than other references already disclosed to the PTO. Tellingly, he further instructed his licensing agent not to disclose the '423 and the '488 laid-open

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[25] Although Dr. Yamazaki initially testified that he learned in 1992 that the '250 had been rejected in part because of the '423 laid-open application, he later clarified that it was not until 1994 that the '423 application was cited as a basis for the rejection. Had Dr. Yamazaki discovered in 1992 that the '423 was a basis on which his '250 application had been rejected, he would have been immediately placed on notice of his duty to disclose the '423 in connection with his pending 132 patent application. As Dr. Yamazaki testified, the Japanese '250 application has One-to-one relationship with both the '132 one the '636 patents.

applications to I.B.M., a prospective licensee.[26] This ploy failed as during his licensing meeting with I.B.M. in March 1995, I.B.M. representatives specifically called attention to the fact that Dr. Yamazaki had failed to disclose the '423 and '488 applications to the PTO as prior art in the '132 proceeding. Following the meeting with I.B.M. Dr. Yamazaki submitted the references to the PTO on April 20, 1995 in connection with the continuation application of the '494 application. Dr. Yamazaki also submitted the '423 and the '488 references to the PTO on June 7, 1995, in connection with the '636 patent application.

The materiality of the '423 and the '488 laid-open applications to the prosecution of the '132 application is pellucidly clear. Dr. Fonash convincingly testified that the elements in claim 7 of the '132 patent are taught in the '488 and the '423 laid open applications. The disclosures in the '423 were in fact, part of the basis on which the Japanese patent office had earlier rejected the corresponding '250 application. Thus, disclosure of the '423 and the '488 laid open applications during the '132 prosecution would have given rise to a prima facie case of unpatentability. They were highly material prior art.

C. Additional Omissions During the '132 and the '636 Patent Applications

Samsung, during the inequitable conduct hearing, alleged two additional instances of material withholdings by SEL

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[26] Specifically, in a January 1995 letter, Dr. Yamazaki instructed his licensing agent that:

> We think SEL's laid-open applications indicated in our letter of January 10, 1995 would be more relevant than any other materials. Please be careful not to disclose these laid-open applications to I.B.M.

during the '132 and the '636 patent applications.[27] First Samsung claims that SEL deliberately failed to disclose as prior art Japanese Patent No. 58-2073 issued to Sony ("the Sony '2073 patent"), even though it was aware that the Sony '2073 patent was a basis on which the Japanese patent office ejected its corresponding '250 patent application. Second, Samsung contends that SEL deliberately failed to disclose the materials [492] produced in connection with Dr. Yamazaki's 1983 Reston Virginia speech, even though these materials discuss the importance of low levels of impurities in electronic devices.

1. The Sony '2073

Dr. Yamazaki testified that in 1992, when he originally received the rejection of the '250 Japanese laid-open application, the Sony '2073 was cited as one basis for the rejection.[28] Mr. Yamamoto, who also learned of the basis for the '250 rejection in 1992, thus initially instructed SEL's patent attorney to disclose the Sony '2073 reference to the PTO in connection with an application within the '250 application-'132-'636 chain.[29] Inexplicably, SEL later instructed its patent attorney to file an Information Disclosure Statement ("IDS") in connection with the application that omitted the Sony '2073 reference. The '250 application was finally rejected by the Japanese patent office in October 1994 based on the disclosures in the Sony '2073 and Dr.

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[27] These additional allegations of inequitable conduct were raised for the first time at the hearing. Accordingly, the evidence adduced concerning these allegations is considered for the limited purpose of ascertaining SEL's motive, plan, and intent with respect to the '636 patent. See Rules 402, 403, 404(b), Fed. R. Evid.

[28] The Japanese patent office later cited to the '423 laid-open application as an additional basis for rejection.

[29] Specifically, this was Application No. 885,643, which was filed on May 19, 1992, and which was later abandoned. *See* appendix.

Yamazaki's own '423 laid-open application. Yet, the Sony '2073 was not disclosed as prior art during the prosecutions of the '132 or the '636 patents. And significantly, the Sony '2073 patent was not a reference that was asserted against SEL by a prospective licensee, as were the Tsai article and the '423 and '488 applications that were eventually cited to the PTO by SEL in the '636 proceeding, but omitted from the '132 proceeding.

Thus, by 1992, SEL was aware that the '250 application, which Dr. Yamazaki conceded has a "one-to-one" relationship with both the '132 and the '636 patents,[30] had been rejected by the Japanese patent office based in part on the Sony '2073 patent. Yet, it failed to disclose the reference to the PTO despite the specific admonitions found in Rule 56.[31] Further, Dr. Fonash testified that the Sony '2073 combined with the '423 application rendered obvious every element of Claim 1 of the '132 patent. Thus, the Sony '2073 was clearly a highly material reference that came to the attention of Dr. Yamazaki during the '132 application and well before the prosecution of the '636 application.

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[30] Both of which also rely on the '250 application for priority stemming from the '250 application's May 1984 filing date. This, of course, is significant in assessing the patentability of the invention claimed in the '132 and '636 patents.

[31] In connection with an applicant's duty to disclose all information known to be material to patentability, 37 C.F.R. § 1.56 specifically "encourages" applicants to examine

> (1) Prior art cited in search reports of a foreign patent office in a counterpart application, and
>
> (2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentability defines, to make sure that any material information contained therein is disclosed to the Office.

2. The Reston Materials

Dr. Yamazaki testified that his May 1983 speech in Reston, Virginia concerned the development of low impurity levels in the semi conductor layer. The speech was thus antecedent to, and concerned the same subject matter as, the August 1983 Tsai speech. Notably, Dr. Yamazaki conceded that the speech and related materials disclose the importance of low levels of impurities and "would be important" on this issue. An abstract from Dr. Yamazaki's speech was published, and he eventually published a full paper in the Journal of Non-Crystalline Solids. SEL did not disclose any of these materials to the PTO during its prosecution of either the '132 or the '636 patent applications. And significantly, unlike the references disclosed in the '636 proceeding but not in the '132 proceeding,[32] none of these materials was asserted against SEL by a prospective licensee in the course of licensing negotiations on these patents.

Dr. Yamazaki gave inconsistent testimony with regard to the materiality of his Reston speech and materials. He initially testified at the hearing that he only became aware of [493] the importance of the Reston materials during the Spring of 1996, and even then, only considered them to be important with regard to the '204 patent. Dr. Yamazaki testified that he did not submit the materials to the PTO because the '204 patent had issued prior to the Spring of 1996. Later, however, Dr. Yamazaki seemed to retreat from this position, stating that he did not understand the Reston materials to be prior art, even with regard to the '204 patent. Further, Dr. Yamazaki stated that his discussion at Reston was in fact cumulative of other references cited during the '636 prosecution. Yet, Dr. Yamazaki also stated, inconsistently, that the one-page abstract from his Reston speech did not overlap with other references cited. In any

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[32] Such as the Tsai article and the '423 and '488 laid open applications.

event, the record is inconclusive on whether the Reston speech was material prior art.

D. The '204 Patent Application

Samsung alleges two instances of inequitable conduct by SEL during its prosecution of the '204 patent. First, Samsung contends that SEL deliberately withheld reliable test results which conclusively established that prior art devices attained lower impurity levels than those claimed in the '204 patent. Second, Samsung contends that SEL knowingly overstated the efficiency levels achieved in the '204 patent in arguing for patentability.

Again, the threshold issue is the relevance of any inequitable conduct by SEL in connection with its prosecution of the '204 patent. And, in this regard, it is significant that the '204 patent is not a part of the '250 application-'132-'636 chain. Samsung contends, however, that where inequitable conduct is found in an application that results in an issued patent, that misconduct may render a closely related patent-in-suit unenforceable. This contention is an application of what is sometimes referred to as the "infectious unenforceability" doctrine. Relying on this doctrine, Samsung contends that because the '204 patent and the '636 patent have a common inventor, common owner, similar prior art references, and a similar subject matter (*i. e.*, inventions relating to low impurity levels), inequitable conduct during the prosecution of the '204 patent may be sufficient to render the '626 patent unenforceable.

This argument like Samsung's argument in connection with the '132 patent, also requires an extension of existing law. To date, no Federal Circuit decision has applied the infectious unenforceability doctrine based solely upon such commonalities. *See Consolidated Aluminum*, 910 F.2d at 812 (infectious unenforceability applied where inequitable

conduct during prosecution of one patent "permeated the prosecution of the other" patents-in-suit).[33] And, because SEL's inequitable conduct during its prosecution of the '636 patent application is sufficient to render the claims of the '636 patent unenforceable, this issue need not be reached.

Moreover, the alleged misconduct during the prosecution of the '204 patent is too remote from the patent-in-suit to be probative of SEL's plan, motive, intent and pattern and practice with regard to the '636 patent. *See* Fed.R Evid. 402. 403, & 404(b). The information allegedly withheld and mischaracterized during the prosecution of the 204 patent is not information that was material to the prosecution of the '636 patent. And, there is no suggestion that the alleged misconduct was connected to, or of consequence, during SEL's subsequent prosecution of the '636 patent. Thus, Samsung has failed to establish the relevance of the alleged misconduct with respect to the patent-in-suit.

IV.

It is clear that SEL knowingly made several highly material withholdings and [494] mischaracterizations during the prosecution of its '132 and '636 patent applications. The issue of intent remains. And in this regard, it is worth restating that

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[33] In *Consolidated Aluminum*, the Federal Circuit found that the patentee's inequitable conduct during the prosecution of one patent enabled it to make "argument[s] it could not have made" in prosecuting the applications that became the other patents-in-suit. 910 F.2d at 811. Therefore, the patentee's misconduct "permeated the prosecution of the other patents-in-suit. *id.* at 812. On this basis, the court held that the inequitable conduct in prosecuting the one patent had the "immediate and necessary relation" to the equity sought by the patentee, namely the enforcement of the other patents-in-suit, to render them similarly unenforceable. *Id.* at 811-812. In the instant case, there is no such relation between the alleged misconduct during the prosecution of the '204 patent and the sought after enforcement of the '636 patent.

the "materiality of an undisclosed reference does not presume an intent to deceive." *Halliburton*, 925 F.2d 1435. Yet, where, as here, a patentee faces a "high level of materiality and clear proof that it knew or should have known of that materiality, it can expect to find it difficult to establish 'subjective good faith' sufficient to prevent the drawing of an inference of intent to mislead." *Critikon*, 120 F.3d at 1257. In such circumstances, a "mere denial of intent to mislead (which would defeat every effort to establish inequitable conduct) will not suffice." *Id.* In the final analysis, intent is a judgment that must be made on the totality of the circumstances; courts must determine whether an applicant's conduct, when "viewed in light of all the evidence, including evidence indicative of good faith, . . . is culpable enough to require a finding of intent to deceive." *Halliburton*, 925 F.2d at 1443.

In the instant case, a review of the record as a whole points clearly and convincingly to the conclusion that SEL's conduct before the PTO with regard to the '636 is sufficiently culpable to warrant a finding of intent to deceive. The evidence clearly reveals that Dr. Yamazaki is an accomplished inventor who is intimately involved in the prosecution of his patent applications. As he testified, "patents are my life. They are very important to me." Securing a patent on the '636, given its revenue generating potential, was particularly important to Dr. Yamazaki and his company. In pursuit of this goal, the evidence shows clearly that Dr. Yamazaki compromised his fundamental duty of candor to the PTO.

Thus, SEL submitted to the PTO a full Japanese language version of the Canon '968 application, but only a one-page partial English translation. The partially translated portion of Canon disclosed only one of the elements of the asserted claims in the '636 application, the silicon nitride gate insulator. Further, SEL identified the relevance of the Canon '968 application to the PTO only as "disclos[ing] the use of

silicon nitride for a gate insulating layer of a thin film transistor." Yet, clear and convincing expert testimony established that the untranslated portions of the Canon '968 application disclosed other elements of the structure found in the '636 patent; *i.e.* the same intrinsic semi conductor layer, the same sandwich structure, and the admonition to avoid impurities. The Canon '968 thus contained the most complete combination of the elements[34] described in the '636 patent. These same elements, such as the limitation of an intrinsic semiconductor layer, were used by SEL to distinguish the '636 patent application from prior art. And, given that Dr. Yamazaki decided to submit just a partial translation of Canon, it is simply not credible that Dr. Yamazaki was unaware that the untranslated portions of the Canon '968 application disclosed the additional elements described in his '636 patent application. These elements, of course, formed a basis for SEL's patentability argument.

SEL contends that its decision to provide the PTO with a full Japanese language version of the Canon '968 application and a partial English translation along with 90 other references of prior art, is indicative of its good faith compliance with the duty to disclose. Yet, far more plausible, on this record, is that SEL's submission of a partial translation was an effort to conceal from the PTO the full importance of the Canon '968 application; *i.e.*, that it disclosed the same structure found in the '636 patent, and not merely one of its elements. While SEL correctly notes that the patent examiner could have secured a full translation from within the PTO,[35] SEL's brief statement of relevance identifying only the silicon nitride gate as pertinent, coupled with the partial translation disclosing that element, certainly removed any incentive to do so. Thus, the evidence points

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[34] That is, in addition to the silicon nitride gate insulator.

[35] See Manual of Patent Examining Procedure § 901.05(d).

clearly and convincingly to the conclusion that (1) SEL knew that a full translation of Canon, which disclosed the same TFT structure as described in the '636, would decrease the likelihood of the '636 patent being issued, and (2) it knowingly concealed the full importance of the Canon '968 reference in an effort to mislead the PTO.

SEL also disclosed to the PTO the Tsai article, which, as expert testimony clearly and convincingly established, is highly material to the subject matter of the '636 patent, as it teaches the making of amorphous silicon with impurity concentrations within the levels recited in all claims of the '636 patent. Also clear from the record is that SEL's efforts to distinguish the Tsai article, based on it's application primarily to solar cells and on the perpendicular direction of the current flow, were not only invalid, but also inconsistent with its own position on the subject. Thus, in a January 1995 letter to his licensing agent for the '132 patent, Dr. Yamazaki concedes that "we do not think there is a more relevant reference than C.C. Tsai's abstract of August 22, 1983 and his (sic) papers of December, 1983." In his '423 and '488 laid-open applications and his '400 patent application, Dr. Yamazaki clearly recognized that inventions directed to low levels of impurities in solar cells are highly relevant to TFT's. Moreover, SEL's argument before the PTO is flatly belied by the fact that in this very infringement action, SEL originally asserted two patents against Samsung that are directed mainly to low levels of impurities in solar cells, the '204 and the '400 patents. Thus, the record points clearly and convincingly to the conclusion that in distinguishing the Tsai article before the PTO, SEL knowingly advanced a meritless argument in an effort to mislead the PTO.[36]

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[36] It is worth noting that advocacy before the PTO is appropriate. But, there is a line between legitimate advocacy in accordance with the duty of candor, and advocacy that the applicant surely knows has a propensity to mislead the examiner. Here, that line was crossed.

Moreover, SEL's motive for engaging in such conduct is illuminated by Dr. Yamazaki's testimony of why, following the issuance of the '132 patent, he felt compelled to file the application which led to '636 patent. In essence, Dr. Yamazaki testified that he knew, after meeting with several prospective licensees who called attention to SEL's withholdings during the '132 prosecution, that his potentially lucrative patent was vulnerable. To remedy this problem, he decided not to seek reissue of the '132 patent,[37] but to pursue a new patent on the same invention that would be immune from the problems that infected the '132 patent. Thus, SEL filed and pursued the '636 patent. In doing so, SEL was not required to surrender the '132 patent or to disclose the specific errors that were made in connection with the prosecution of that patent.[38]

Yet, SEL still had to avoid the prior art references that it was now forced to disclose to the PTO, such as the Tsai article and the '423 and the '488 applications. Thus, SEL mischaracterized the Tsai article as applying primarily to solar cells. Further, as Dr. Yamazaki testified, SEL had to limit the claims of the '132 patent.[39] Specifically, the '636 patent is limited to an IGFET with a *silicon nitride* gate, and an *intrinsic* silicon layer, and a *sandwich* structure in the

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[37] Reissue is the well-established procedure available to patentees who have inadvertently and without any deceptive intention made errors before the PTO. This procedure first requires surrender of the patent at issue as well as a specification of errors or omissions previously made. *See* 35 U.S.C. § 251.

[38] Note, however, that the result reached here does not depend in any way on SEL's decision not to surrender and seek reissue of the '132 patent, nor does this decision suggest that SEL had a duty to do so.

[39] Specifically, when asked why he limited the claims of the '636, Dr. Yamazaki testified that "there were these various references. These references were to be avoided, but I don't believe that the essential nature of the invention also [was] changed."

channel region, while the claims in the '132 patent are not so limited. Of all the references cited to the PTO in connection with the '636 patent application, only the Canon '968 application describes a TFT containing each of these three elements. Clearly, then, the Canon '968 was a highly material reference to the '636 patent application, which posed a significant threat to rendering the '636 unpatentable. It is simply implausible, under the circumstances, that SEL was not aware of this fact. Rather, the evidence points clearly and convincingly to the conclusion [496] that SEL's awareness of this fact motivated its decision to submit just the partial English translation in an effort to hide material information.

Finally, when viewed in conjunction with SEL's conduct during the prosecution of the '132 patent application, the record as a whole reflects a clear pattern and practice of initial nondisclosure, followed by incremental disclosure only when compelled by the circumstances to do so, followed, at times, by mischaracterization. Thus, SEL intentionally withheld four material prior art references; the Tsai article, the '423 and the '488 laid-open applications, and the Sony '2073 patent. The record as a whole points clearly and convincingly to the fact that SEL knew of these materials during the pertinent period. Yet, SEL disclosed the references to the PTO only when forced to do so by a prospective licensee. Thus, the Tsai article and the '423 and '488 applications were cited to the PTO only after these matters were asserted by prospective American licensees during negotiations, whereas the Sony '2073, which was called to SEL's attention by the Japanese patent office and not a potential licensee, was never disclosed to the PTO.

And, after receiving an initial rejection of the '132 patent based on the impurity levels in the Nakagawa '477 patent, SEL submitted to the PTO an amendment which erroneously calculated the level of impurities disclosed in the Nakagawa '477 patent as 4×10^{19} at oms/cm^3. The error, for which no

satisfactory explanation was provided, conveniently provided SEL with a basis from which to overcome the Nakagawa '477 patent. And when prosecuting the '636 patent application, the patentability of which was dependant on its specific limitations combined with its impurity levels, SEL concealed the importance of the Canon '968 application and disingenuously distinguished Tsai.

The evidence demonstrates a sophisticated, subtle, and consistent effort to hide the ball from the PTO in a manner plainly at odds with an applicant's duty of candor, good faith, and honesty. The record, as a whole, simply contains too many instances of information withheld, and references mischaracterized, to reach any conclusion other than that the withholding and mischaracterizations were part of an intentional, not accidental or inadvertent, plan to mislead the PTO.

V.

During its prosecution of the '636 patent application, SEL knowingly made two highly material withholdings and/or mischaracterizations. The prior art references withheld and/or mischaracterized were not trivial, but rather were central to the essential question of patentability. The evidence points clearly and convincingly to the conclusion that this conduct was performed with the intent to deceive the PTO. Consideration of *SEL's* conduct in connection with the prosecution of the '132 patent only bolsters this conclusion. Thus, SEL engaged in inequitable conduct during the prosecution of the '636 patent, and accordingly, the entire patent is unenforceable.

For the foregoing reasons, SEL's patent infringement suit against Samsung must be dismissed with prejudice.

An appropriate order shall issue.

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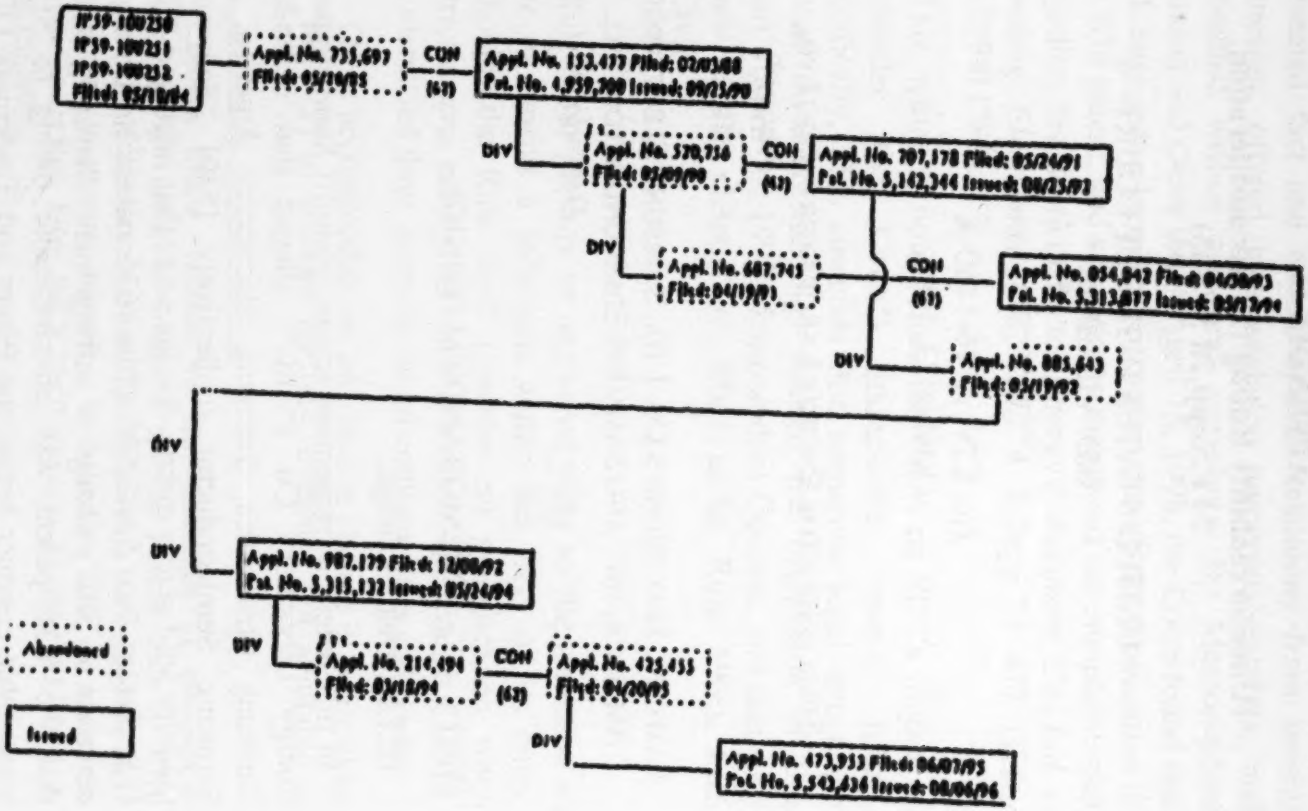
USP 5,543,636



APPENDIX G

(Unenforceability Ruling On Reconsideration, 24 F.Supp.2d 537-45)

UNITED STATES DISTRICT COURT
E.D. VIRGINIA

No. CIV. A. 96-1460-A
October 23, 1998

SEMICONDUCTOR ENERGY LABORATORY, CO., LTD.,
Plaintiff,

v.

SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC. AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants.

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[538] MEMORANDUM OPINION

ELLIS, District Judge.

In this patent infringement action, plaintiff Semiconductor Energy Laboratory Co. ("SEL") alleged that defendants Samsung Electronics, Samsung Electronics America, and Samsung Semiconductor (collectively [539] "Samsung") made or sold active matrix display units that infringed SEL's U.S. Patent No. 5,543,636 ("the '636 patent"). Among its defenses to SEL's charge of infringement, Samsung alleged that the '636 patent was unenforceable owing to SEL's inequitable conduct before the Patent and Trademark Office ("PTO"). Between March 17, 1998 and April 3, 1998, a seven-day hearing was held on Samsung's affirmative defense of inequitable conduct, during which time the parties

presented fact and expert opinion testimony from several witnesses, offered into evidence numerous exhibits, and submitted written and oral arguments. By Memorandum Opinion and Order dated April 15, 1998, the Court found that SEL engaged in inequitable conduct during the prosecution of the '636 patent, and accordingly dismissed the complaint with prejudice. *See Semiconductor Energy Laboratory, Co., Ltd. v. Samsung Electronics Co., Ltd.*, 4 F.Supp.2d 477 (E.D.-Va.1998) ("SEL 1").

This matter is now before the Court on SEL's motion to reconsider the Court's inequitable conduct ruling. Specifically, SEL contends that numerous legal errors and factual misunderstandings formed the foundation of this Court's April 15, 1998 Memorandum Opinion, and that such errors entitle plaintiff to relief under Rule 59(e), Fed. R.Civ.P.[1]

I.

Rule 59(e) permits an aggrieved party to file a motion to alter or amend a judgment within ten days of its entry. Although the Rule itself provides no guidance on when district courts may grant such a motion, the Fourth Circuit[2] has identified three grounds for amending a prior judgment:

> (1) to accommodate an intervening change in controlling law; (2) to account for new evidence not available at

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[1] Although SEL's "Motion for Reconsideration of In-equitable Conduct Ruling" failed to invoke a specific Federal Rule of Civil Procedure, a motion for reconsideration, filed within ten days of the entry of judgment, is properly treated as a motion to alter or amend the judgment under Rule 59(e), Fed.R.Civ.P. *See in re Burnlev*, 983 F.2d 1, 2-3 (4th Cir.1992).

[2] The Federal Circuit generally defers to "regional circuit law when the precise issue involves an interpretation of the Federal Rules of Civil Procedure or the local rules of the district court." *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 857 (Fed.Cir. 1991).

> trial; or (3) to correct a clear error of law or prevent manifest injustice.

E.E.O.C. v. Lockheed Martin Corp., 116 F.3d 110, 112 (4th Cir.1997)(citing Hutchinson v. *Staton*, 994 F.2d 1076, 1081 (4th Cir.1993)).

In the instant case, SEL does not assert the first ground as a basis for relief, but rather relies on the second and third. Yet, reliance on the second ground is misplaced, for "new evidence" must be "newly discovered since the judgment was entered." *Boryan v. United States*, 884 F.2d 767, 771 (4th Cir.1989). SEL's evidence does not satisfy this definition.[3] Thus, because "[e]vidence that is available to a party prior to entry of judgment . . . is not a basis for granting a motion for reconsideration as a matter of law,"[4] SEL must rely on the third ground as a basis for Rule 59(e) relief.

Therefore, to win Rule 59(e) relief, SEL must establish that there has been a clear error of law, or that a manifest injustice will result from enforcement of this Court's April 15, 1998 Order. *See Lockheed Martin*, 116 F.3d at 112.[5] SEL succeeds

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[3] SEL relies heavily in its motion for reconsideration on numerous documents not presented at trial, specifically, (i) several documents from patent prosecution files, (ii) two declarations, one from an individual never previously identified, and (iii) a supplemental report of one of Samsung's experts. Yet the record reveals, and SEL does not deny, that the evidence now offered in support of its Rule 59(e) motion was either in SEL's possession prior to trial or was attainable by SEL prior to trial.

[4] See *Borvan*, 884 F.2d at 771. A district court may, in its discretion, accept material that is not technically "new evidence," provided that a party's failure to produce it initially was justified. *See RCI, Inc. v. Unified Indus., Inc.*, 963 F.2d 658, 662 (4th Cir.1992). This is not such a case. SEL had ample notice of Samsung's inequitable conduct allegations, and offers "no justified reason" why these materials were not produced during the seven day hearing. *See id*

[5] SEL argues that its post-judgment declarations establish that the Court's ruling was based on an erroneous understanding of the evidence,

in neither [540] respect. First, SEL asserts two arguments with respect to its submission of a partially translated foreign application based on purportedly clear errors of law. But as this opinion reflects, (i) the Court correctly applied the right rule for "cumulative evidence" and (ii) PTO Rule 98(a)(3) does not excuse SEL's conduct. Second, SEL points out that the previous opinion proceeds on a mistaken assumption about which patent prosecution included certain misrepresentations and arguments made with respect to the Tsai reference. Nonetheless, this mistake of fact does not affect the result reached. Under settled principles of law, and sensible extensions of these principles, the same result obtains, even if, as it now appears, these arguments were made during the prosecution of the '455 application (No. 425,455) and the '494 application (No. 214,494) rather than the '636 patent.[6]

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and that consideration of these declarations is required to prevent a fundamental miscarriage of justice. Of course, the declarations in issue would be properly considered on those grounds. *See Lockheed Martin*, 116 F.3d at 112. Yet, rather than reveal any such error, the declarations submitted here merely reveal SEL's continued disagreement with this Court's findings. Indeed, the declarations advance essentially the same arguments that were advanced by SEL's experts at the hearing and ultimately found unpersuasive by the Court, *See SEL*, 4 F.Supp.2d at 482, n. 8.

[6] 6. SEL also asserts that

(i) the Court's treatment of the Sony '2073 patent was legal error,

(ii) the finding of *prima facie* obviousness from the combination of the Japanese laid-open Application No. 56-135968, assigned to Canon K,K, (the "Canon '968 application") and a 1983 article by Dr. C.C. Tsai, titled "Amorphous Si Prepared in a UHV Plasma Deposition System" (the "Tsai reference" or "Tsai article") was legal error,

(iii) estoppel precludes Samsung from arguing that the Canon '968 Application is not cumulative evidence,

(iv) the Court's finding regarding the '636 IDS's summary of the Canon '968 application is an error of fact and law,

II.

A. The Canon '968 Application

In *SEL I*, the Court found that SEL engaged in inequitable conduct before the PTO in connection with its submission to the PTO of the Canon '968 application when it chose to submit a partial translation and a summary that together concealed the materiality of the Canon '968 application. *See SEL*, 4 F.Supp.2d at 494-95. SEL, of course, disagrees. It argues first that the Court's finding that the Canon '968 application was material, and hence not cumulative of other information before the PTO, was based on an improper legal standard. Second, SEL argues that its submission of a partial translation of the Canon '968 application that was already in existence cannot constitute inequitable conduct as a matter of law. Both arguments are meritless and warrant no Rule 59(e) relief.

1. The Canon '968 Application Was Not Cumulative

It is undisputed that information that is cumulative to information already of record is not material to patentability. 37 C.F.R. § 1.56. Also essentially undisputed is that, as noted in *SEL I*, "a withheld reference may be highly material when it discloses a more complete combination of relevant features, even if those features are before the patent examiner in other references." *SEL*, 4 F.Supp.2d at 482 (citing *Molins*,[7]

(v) the Court's understanding of the '636 patent's claim is legal error, and

(vi) SEL's arguments about the Tsai reference were not frivolous or inconsistent.

Yet, these arguments are mere reassertions of arguments advanced and rejected in *SEL I*, and thus are inappropriate on a Rule 59(e) motion and need not be addressed again here.

[7] *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1180 (Fed.Cir. 1995) (reference material where it showed a combination of the elements for

LaBounty,[8] *In re Jerabek*[9]). SEL contends that the Court oversimplified [541] the standard in its materiality analysis by simply counting the number of elements disclosed in the Canon '968 application without any consideration for whether the disclosure of that combination was actually significant. Yet, SEL is mistaken. The fact that no other reference before the examiner contained as complete a combination of the '636 patent's elements as in the untranslated portions of the Canon '968 application was, of course, central to the Court's conclusion that the Canon '968 application was not merely cumulative. *See Id.* at 484. But the conclusion was additionally informed by the fact that the absence of a fully translated Canon '968 application before the PTO enabled SEL to make arguments in support of patentability that it otherwise would not have been able to make. *See id.* at 494, Thus, contrary to SEL's assertion, the Court did not simply apply a "mathematical formula" to determine materiality.[10]

2. PTO Rule 98(c) Does Not Excuse SEL's Inequitable Conduct

In connection with its '636 patent application, SEL submitted (i) a full 29-page Japanese language version of the Canon '968 application, (ii) a one-page partial translation of

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which the examiner had relied upon two separate references to reject the patent application claims).

[8] *LaBounty Mfg., Inc. v. United States Int'l Trade Comm'n*, 958 F.2d 1066, 1075-76 (Fed. Cir. 1992)(undisclosed items were material when they disclosed "more relevant features" than the cited items).

[9] *In re Jerabek*, 789 F,2d 886, 890 (Fed,Cir,1986)(withheld reference material when no single piece of cited prior art taught the combination present in the reference).

[10] While SEL may disagree with the Courts application of the cumulative evidence standard, "mere disagreement does not support a Rule 59(e) motion." *See Hutchinson*, 994 F.2d at 1081.

the Canon '968 application disclosing the use of a silicon nitride gate insulator in a thin film transistor ("TFT"), and (iii) a statement describing the Canon '968 application's relevance to the '636 patent as " 'disclos[ing] the use of silicon nitride for a gate insulating layer of a [TFT].' " *See SEL*, 4 F.Supp.2d at 483. Yet, as *SEL I* noted, the Canon '968 application's relevance to the patentability of the invention claimed in the '636 patent was far more substantial. *See Id.* Indeed, the evidence adduced at trial was clear and convincing that the Canon '968 application disclosed other elements of the invention claimed in the '636 patent, elements which formed a basis for SEL's patentability argument.[11] *See id*, 4 F.Supp.2d at 494. In finding inequitable conduct, the Court concluded that SEL knew that the untranslated portions of the Canon '968 application disclosed these additional elements, and that SEL deliberately attempted to conceal the true significance of the Canon '968 application to ensure the issuance of the '636 patent. *See id.*

In its motion to reconsider, SEL argues unpersuasively that because the partial translation of Canon was prepared in

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[11] Specifically, the untranslated portion of the Canon '968 application described the same TFT structure that is found in the '636 patent: a structure with the same intrinsic semiconductor layer made from amorphous silicon; the same channel region sandwiched between the insulators; and (in both the translated and the untranslated portions), the same silicon nitride gate insulator as claimed in the '636 patent. *See SEL*, 4 F.Supp.2d at 483. The untranslated portions of the Canon '968 application also provided the "frequent admonitions to prevent or limit atmospheric impurities in semiconductor materials, which provide an express suggestion to employ teachings such as those found in the Tsai article or in the '423 or the '488 applications to reduce carbon, oxygen and nitrogen impurities below the levels claimed in the '636 patent." *See id.* Thus, the Court found by clear and convincing evidence that the 'untranslated portions of the Canon '068 application contained information highly material to the prosecution of the '636 patent application as they, together with other information, establish a *prima facie* case of unpatentability." *See id.* at 484.

connection with a prior patent application, and because its submission was thus required by Rule 98(c), 37 C.F.R. § 1.98(c), SEL's conduct in this regard cannot constitute inequitable conduct. In relying on Rule 98(c) to excuse the failure to submit a fully translated version to the PTO. SEL places more weight on the rule than it can bear. Rule 98(c) requires an applicant to submtt any translations of a reference that they might possess. But that rule provides a floor for required submissions of translations of foreign applications, not a ceiling; it is by no means an excuse or license for concealing material portions of a prior art reference. Yet, SEL's submission of the partial translation combined with its brief statement of relevance does just that.[12] Thus, reliance on [542] Rule 98 (a)(3) affords SEL no relief from the effects of its conduct.

In short, SEL's inequitable conduct with respect to the Canon '968 is an adequate and independent basis for finding the '636 patent unenforceable as a result of inequitable conduct; [13] SEL's arguments to the contrary are meritless.

B. The Tsai Reference

SEL I proceeded on the premise that misrepresentations concerning the Tsai reference were made with respect to the '636 patent application, whereas in fact, they were made with

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[12] *See SEL*, 4 F.Supp.2d at 494 ("SEL's brief statement of relevance identifying only the silicon nitride gate as pertinent, coupled with the partial translation disclosing that element, certainly removed any incentive [for the examiner to secure a full translation].").

[13] In *SEL I*, the Court found that credible expert testimony convincingly established that the fully translated Canon '968 application, when combined with the Tsai reference, rendered obvious the asserted claims of the '636 patent. *See SEL*, 4 F.Supp.2d at 484. Because the Tsai article did not individually create a *prima facie* case of obviousness, the failure to submit a fully translated version of the Canon '968 application is in and of itself sufficient to justify a finding of inequitable conduct.

respect to the related '455 and '494 applications.[14] Given this, SEL argues, the misrepresentations concerning the Tsai reference cannot support a finding of inequitable conduct with respect to the '636 patent, and SEL is therefore entitled to relief.[15]

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[14] *SEL I* set forth in some detail the facts regarding the relationship of some of the relevant patents and patent applications and attached a diagram which clarifies these relationships. *See SEL*, 4 F.Supp.2d at 480 and Appendix. In summary, the '636 patent results from continuation and divisional applications from the application that issued as the '132 patent. Specifically, the '494 application was a divisional application of the patent application that became the '132 patent; the '455 application was filed as a continuation application of the '494 application pursuant to PTO Rule 62, thus causing the automatic abandonment of the '494 application. The '953 application, which eventually became the '636 patent, was filed as a divisional application of the '455 application, pursuant to PTO Rule 60. Thus the priority date of the '636 patent relies on the chain of applications that includes the '132 patent, the '494 application and the '455 application. Further, the subject matter of the '636 patent is so closely related to the '132 patent that a terminal disclaimer was filed with respect to the '636 patent, giving it the expiration date of the '132 patent. Both the '132 and the '636 patents rely upon the May 18, 1984 filing date for SEL's Japanese laid-open Application No, 59100250 ("the '250 application"), which has a "one-to-one" relationship with both the '132 and '636 patents. Both the '132 and the '636 patents have the same inventor (Dr. Yamazaki), owner (SEL), disclosure, specification, and title.

[15] SEL also contends that it is clear legal error to base a finding of inequitable conduct on arguments presented to the PTO in support of a patent application. SEL bases this contention on a misinterpretation of two distinguishable cases, neither of which stands for the proposition that, as a matter of law, arguments made to the PTO cannot constitute inequitable conduct. *See Akzo NV. v. United States Int'l Trade Comm'n*, 808 F.2d 1471 (Fed.Cir.1986); *Hughes Aircraft Co. v. United States*, 215 U.S.P.Q. 787, 1982 WL 36740 (Ct.Cl.Trial Div.1982), *aff'd in part, rev'd in part*, 717 F.2d 1351 (Fed.Cir.1983). In *Akzo*, the Federal Circuit held that where neither a "proved material misrepresentation [n]or a proved intent to mislead" exists, the moving party does not meet its burden of proving inequitable conduct. 808 F.2d at 1482. Thus, by implication where, as here, material misrepresentations are made in a position advocated to the PTO with intent to mislead, inequitable conduct does exist. Likewise,

As *SEL I* makes clear, SEL's arguments regarding the Tsai article constituted inequitable conduct because they were (i) knowingly contrary to SEL's own knowledge, (ii) invalid under scientific principles certainly known to Dr. Yamazaki, and (iii) inconsistent with SEL's other positions before the PTO. *SEL*, 4 F.Supp.2d at 484-86.[16] Equally clear is that these arguments constitute inequitable conduct in the context of the prosecution of the related '494 and '455 patent applications, for these applications, like the related [543] '636 patent application, were prosecuted (i) long after the relevant knowledge was available and (ii) while SEL was advocating inconsistent positions to the PTO with respect to the U.S. No. 5,521,400 (" '400") patent.[17]

Hughes Aircraft provides no support for SEL's contention. There, unlike the case at bar, the Court of Claims expressly found that the statements quoted by the defendant were neither untrue nor inconsistent with the defendant's prior positions. 215 U.S.P.Q. at 805, 1982 WL 36740.

[16] Specifically, SEL's argument that the teachings of the Tsai article were primarily applicable to solar cells, not TFTs, was "contrary to its own knowledge, and inconsistent with its own previously stated position on an important issue before the PTO." *SEL*, 4 F.Supp.2d at 484-85. Further, SEL's attempt to distinguish the article on the basis of the direction of the current had no validity, and Dr. Yamazaki, SEL's president and majority shareholder, the inventor of the '636 patent, and a distinguished solid state physicist, surely knew that. *Id.*

[17] The '494 application was filed in 1994; the '455 application was filed in 1995. The Tsai article, which would have been understood by persons of ordinary skill in the pertinent art to apply to TFT's as well as solar cells, was available from 1983. *See SEL*, 4 F.Supp.2d at 489. By 1984, through the '423 and '488 Japanese laid-open applications. Dr. Yamazaki and demonstrated that he recognized "a clear connection between solar cells and TFT's in that the importance of reducing impurities is applicable to both. *Id.* at 485. Moreover, the application of the '400 patent was filed in November 1994, and issued in May 1996, and thus any arguments SEL presented to the PTO during the prosecution of that patent must have been essentially contemporaneous with the arguments advanced in the prosecution of the '455 and '494 applications.

The question now presented, therefore, is whether inequitable conduct in the course of prosecuting the '494 and '455 applications can serve to invalidate the '636 patent, given that these applications are in the direct chain of divisional and continuation applications leading ultimately to the issuance of the '636 patent. More generally, the question is whether a patent can be rendered unenforceable as a result of inequitable conduct that occurred in the prosecution of related divisional and continuation applications earlier in the chain of applications that spawned the patent in issue. Analogous Federal Circuit authority points persuasively to the conclusion that under appropriate circumstances, inequitable conduct earlier in the direct patent chain can render the related ultimately-issued patent unenforceable.[18]

Analysis of the issue appropriately begins with *Fox Industries, Inc. v. Structural Preservation Systems, Inc.*, 922 F.2d 801 (Fed.Cir.1990), where the Federal Circuit broadly enunciated the guiding principle that "[t]he duty of candor extends through the patent's entire prosecution history," and that a breach of the duty of candor "may render unenforceable all claims which eventually issue from the same *or a related application*." 922 F.2d at 803-04 (emphasis added).[19] This

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[18] In any event, because SEL's inequitable conduct with respect to the Canon '968 application constituted an independent and adequate ground for the result reached in *SEL I*, no manifest injustice would result from enforcement of the April 15, 1998 Order holding the '636 patent unenforceable. Thus SEL's contention here concerning the Tsai reference, even if valid, would not satisfy the threshold requirement under Rule 59(e), Fed.R.Civ.P.

[19] *Fox* involved a chain of related applications, the last of which led to the issuance of the challenged patent. There, the original patent attorney knowingly withheld material prior art during the prosecution of earlier applications, but did not draft the pertinent claims as ultimately issued. *See Fox*, 922 F.2d at 803-04. The district court nonetheless found, and the Federal Circuit affirmed, that the attorney's failure to disclose that material prior art constituted inequitable conduct as to the ultimately-issued patent. *See Id.* 922 F.2d at 804. The court also affirmed the district

principle is not without limits. Pertinent Federal Circuit authority also teaches that the mere occurrence of inequitable conduct in connection with an application within a chain of applications is not enough to invalidate a patent issued as a result of a later application in the chain: instead, the earlier inequitable [544] conduct in the chain must be related to the targeted claims of the ultimately-issued patent or patents sought to be enforced.[20] Thus, a patent that issues from a divisional or continuation application may be held unenforceable where (i) there is inequitable conduct with respect to the prosecution of an earlier related application in the chain leading to the challenged patent and (ii) the inequitable conduct relates to the asserted claims of that patent.[21] Were this not the rule, a party committing inequitable conduct could avoid the consequences of that conduct through a scheme of divisional and continuation applications. The law

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court's conclusion that the patent's inventor had intentionally withheld the material prior art throughout the chain of applications, including the application that led to the issuance of the challenged patent. *Id.*

[20] *See Baxter Int'l, Inc. v. McGaw*, 149 F.3d 1321, 1332 (Fed.Cir.1998) (patent issued from divisional application not unenforceable "where the issued claims have no relation to the omitted prior art"); *Consolidated Aluminum Corp. v. Foseco Int'l Ltd.*, 910 F.2d 804, 809-11 (Fed.Cir. 1990) (patents-in-suit unenforceable where inequitable conduct in original application allowed successful arguments in prosecution of patents-in-suit not otherwise possible); *see also East Chicago Machine Tool Corp. v. Stone Container Corp.*, 181 U.S.P.Q. 744, 748 (N.D.Ill.1974), *tacated in part on other grounds*, 185 U.S.P.Q. 210 (N.D.Ill.1974); *Molins PLC v. Textron, Inc.*, 821 F.Supp. 1551, 1581 (D.Del.1992), *affd in part, vacated in part on other grounds*, 48 F.3d 1172, 1187 (Fed.Cir.1995); *Jack Frost Laboratories, Inc. v. Physicians & Nurses Mfg. Corp.*, 901 F.Supp. 718, 729 (S.D.N.Y. 1995), *aff'd*, 124 F.3d 229, 1997 WL 592314 (Fed.Cir.1997).

[21] This principle is also consistent with PTO Rule 56, 37 C.F.R. § 1.56, which makes clear that no patent will be granted on any application "in connection with which" fraud or intentional misconduct occurred or was attempted.

does not countenance such a manipulation of the patent process.

Application of this principle to the instant facts[22] compels the conclusion that SEL's inequitable conduct in connection with the '494 and '455 applications and the earlier '132 patent[23] renders the '636 patent unenforceable. Not only are the omitted prior art and misrepresentations directly relevant to the asserted claims of the '636 patent, but SEL's motivation in prosecuting that patent, *i.e.*, to conceal its prior inequitable conduct rather than cure it, links the issued patent itself directly to the inequitable conduct. In the circumstances, therefore, SEL's inequitable conduct in connection with the '494 and '455 applications and the '132 patent fatally infects the '636 patent.

Seeking to avoid this result, SEL argues that it is enough that it complied with the PTO's disclosure requirements during the prosecution of the specific continuation application

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[22] Those facts are as follows: SEL, in prosecuting the '494 and '455 applications, intentionally distinguished the Tsai article and knowingly minimized its significance on the basis of invalid arguments. *See supra* n. 17 and accompanying text. Moreover, in its prosecution of the '132 patent, SEL knowingly (i) misrepresented the atomic density of amorphous silicon in order to persuade the examiner to allow the claims over the Nakagawa '477 application, and (ii) failed to disclose highly material prior art, specifically the Tsai reference and the '423 and '488 Japanese laid-open applications. *SEL*, 4 F.Supp.2d at 486-91. *SEL I* also makes clear that Dr. Yamazaki realized that SEL's conduct left the '132 patent vulnerable, and sought a new patent, the '636 patent, hoping to insulate the '636 patent from the defects infecting the '132 patent that resulted from such conduct. *SEL*, 4 F.Supp.2d at 495.

[23] The inequitable conduct associated with the prosecution of the '132 patent was previously treated only as Rule 404(b) evidence. *See SEL*, 4 F.Supp.2d at 487, n. 16 and accompanying text. Under the principles elucidated here, inequitable conduct in the course of the prosecution of the '132 patent constitutes an additional basis on which the '636 patent is unenforceable.

leading to the '636 patent. This argument fails factually and legally. It ignores SEL's inequitable conduct concerning the Japanese Canon '968 application, and beyond this, is based on an incorrect understanding of the applicable disclosure requirements. It is not enough that by the time the '636 patent issued, SEL had disclosed the Tsai reference, the correct figure for silicon atomic density and the '423 and '488 Japanese laid-open applications, and had also apparently ceased actively advocating the invalid arguments with respect to the Tsai article. Settled authority makes clear that the duty of candor requires more to cure inequitable conduct. Specifically, *Rohm & Haas Co. v. Crystal Chem. Co.*, 722 F.2d 1556 (Fed.Cir. 1983) teaches that the applicant must (i) expressly advise the PTO of the misrepresentation's existence, (ii) advise the PTO of what the actual facts are and make clear that further examination in light thereof may be required if any PTO action has been based on the misrepresentation, and (iii) establish patentability on the basis of the factually accurate record. *Rohm & Haas*, 722 F.2d at 1572. In support of these cure requirements, the Federal Circuit stated,

> It does not suffice that one knowing of misrepresentations in an application or in its prosecution merely supplies the examiner with accurate facts without calling his attention to the untrue or misleading assertions sought to be overcome, leaving him to formulate his own conclusions.

Id. 722 F.2d at 1572.[24] Inequitable conduct earlier in a chain of related patent applications must be cured in accordance with *Rohm & Haas* or it will continue to infect the [545] process; cure cannot be achieved through manipulation of

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[24] In *Rohm & Haas*, the record was devoid of any evidence showing that the PTO had been told that any misrepresentations had been made and precisely where they had been made. Given this, the court held that the "cure" was insufficient as a matter of law. *Id.* 722 F.2d at 1572-73.

patent prosecution procedures, such as canceling or amending claims or filing continuation and divisional applications.[25] Nothing in the record suggests that SEL took any steps to cure the directly related inequitable conduct; because it pursued a separate, related application instead of seeking reissuance under 35 U.S.C. § 251, for which it was probably not eligible,[26] SEL did not surrender and amend the '132 patent, identify its previous omissions, comply with the requisite cure requirements and establish patentability on a clearly corrected record.

In these circumstances, the inequitable conduct that occurred earlier in the patent chain renders a later patent unenforceable. Thus, the inequitable conduct in the '636 patent chain, i.e. in the prosecution of the '132 patent and the '494 and '455 patent applications, provides an additional alternate and independent ground on which the '636 patent is unenforceable.

III.

SEL has not established any clear error of law in connection with the April 15, 1998 Order rendering the '636 patent unenforceable. Nor has it shown that a manifest injustice will result from enforcement of that order. Indeed, the analysis here confirms that the inequitable conduct that occurred with respect to the '494 and '455 applications and the '132 patent is a separate and independent ground rendering the '636 patent unenforceable that supplements the separate and independent ground found in the April 15, 1998

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[25] *See, e.g., Baxter,* 149 F.3d at 1331 *(Fox* reflects principle that "omission of a reference material to certain claims cannot be cured simply by canceling or amending these claims dunng prosecution so that they do not issue in the same form in which they were drafted"); *Driscoll v. cebalo,* 731 F.2d 878, 884 (Fed.Cir.1984) (nondisclosure of material prior art during prosecution of parent application not excused by substituting related claims in later application without calling to PTO's attention earlier failure to disclose).

Memorandum Opinion, namely, SEL's inequitable conduct with respect to the Canon '968 application.

An appropriate Order will issue.

ORDER

The matter came before the Court on plaintiff SEL's motion to reconsider its April 15, 1998 Order.

For the reasons stated in the accompanying Memorandum Opinion, plaintiff's motion is DENIED.

The Clerk is directed to place this matter among the ended causes.

APPENDIX H

(Federal Circuit Order Denying Rehearing En Banc)

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

[Filed Apr. 26, 2000]

98-1377, 99-1103

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Plaintiff-Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
and SAMSUNG SEMICONDUCTOR, INC.,
Defendants-Cross Appellants.

ORDER

A combined petition for rehearing* and petition for rehearing en banc having been filed by the APPELLANT, and a response thereto having been invited by the court and filed by the CROSS-APPELLANTS, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,

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* The petition for rehearing was granted by separate order on March 29, 2000 to amend the opinion issued on March 2, 2000.

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on May 3, 2000.

Circuit Judge Linn did not participate in the vote.

FOR THE COURT,

/s/ Jan Horbaly
JAN HORBALY
Clerk

Dated: April 26, 2000

cc: J. Alan Galbraith
David J. Healey

APPENDIX I

(35 U.S.C. § 6(a) (1991))

§ 6 Duties of Commissioner

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies, programs, or exchanges of items or services regarding domestic and international patent and trademark law or the administration of the Patent and Trademark Office, including programs to recognize, identify, assess and forecast the technology of patented inventions and their utility to industry; and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

Note: The PTO's power to establish regulations is now found in 35 U.S.C. § 2(b)(2)(1999).

APPENDIX J

(35 U.S.C. § 8 (1975))

§ 8. Library

The Commissioner shall maintain a library of scientific and other works and periodicals, both foreign and domestic, in the Patent and Trademark Office to aid the officers in the discharge of their duties.

APPENDIX K

(PTO Rule 56)
(37 C.F.R. § 1.56)

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

APPENDIX L

(PTO Rule 98)
(37 C.F.R. § 1.98)

Content of information disclosure statement.

(a) Any information disclosure statement filed under § 1.97 shall include:

(1) A list of all patents, publications, or other information submitted for consideration by the Office;

(2) A legible copy of:

(i) Each U.S. and foreign patent;

(ii) Each publication or that portion which caused it to be listed; and

(iii) All other information or that portion which caused it to be listed, except that no copy of a U.S. patent application need be included; and

(3) A concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.

(b) Each U.S. patent listed in an information disclosure statement shall be identified by patentee, patent number and issue date. Each foreign patent or published foreign patent application shall be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication shall be identified by author (if any), title, relevant pages of the publication, date and place of publication.

(c) When the disclosures of two or more patents or publications listed in an information disclosure statement are substantively cumulative, a copy of one of the patents or publications may be submitted without copies of the other patents or publications provided that a statement is made that these other patents or publications are cumulative. If a written English-language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in § 1.56(c), a copy of the translation shall accompany the statement.

(d) A copy of any patent, publication or other information listed in an information disclosure statement is not required to be provided if it was previously cited by or submitted to the Office in a prior application, provided that the prior application is properly identified in the statement and relied upon for an earlier filing date under 35 U.S.C.120.

APPENDIX M

(Notice of Final Rulemaking)
57 Fed. Reg. 2021
(January 17, 1992)
(Pertinent Text)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1 and 10

Docket No. 910764-1306

RIN 0851-AA27

Duty of Disclosure

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of final rulemaking.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to (1) clarify the duty of disclosure for information required to be submitted to the Office; (2) provide flexible time limits for submitting information disclosure statements including the requirement for a fee in certain cases; (3) eliminate consideration of duty of disclosure issues by the Office except in disciplinary and interference proceedings, and under other limited circumstances and (4) eliminate the striking of patent applications which are improperly executed. The Office further is amending the Patent and Trademark Office Code Of Professional Responsibility to define as misconduct a failure to comply with the rules on duty of disclosure. The rules as adopted strike a balance between the need of the Office to obtain and consider all known relevant information pertaining to patentability before a patent is granted and the desire to avoid or minimize unnecessary complications in the enforcement of patents.

EFFECTIVE DATE: March 16, 1992. These rules will be applicable to all applicants and reexamination proceedings pending or filed after the effective date.

* * *

Changes in Text

[57 Fed. Reg. 2022]

The final rule contain several changes to the text of the rules as proposed for comment. Those changes are discussed below.

Section 1.17(t)(1) has been changed from the proposed text to reflect the recent increase in the amount of the fee for filing a petition from $120.00 to $130.00.

Section 1.56(a) has been clarified to indicate that the duty of an individual to disclose information is based on the knowledge of that individual that the information is material to patentability. A sentence has been added to § 1.58(a) to express the principle that the Office does not condone the granting of a patent on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or international misconduct. In addition, § 1.58(a) as proposed has been changed to indicate that if all information material to patentability of any claim issued in a patent is cited by the Office or submitted to the Office in the manner prescibed by §§ 1.97(b)-(d) and 1.95, the Office will consider as satisfied the duty to disclose to the Office all information known to be material to patentability, as contrasted to the broader duty of candor and good faith. This rule does not attempt to define the spectrum of conduct that would lack the candor and good faith in dealing with the Office which is expected of individuals who are associated with the filing or prosecution of a patent application.

* * *

Response to and Analysis of Comments

57 Fed. Reg. 2023

Sixty (60) written comments were received in response to the notice of proposed rulemaking. These comments, along with those made at the public hearing, have been analyzed. Some suggestions made in the comments have been adopted and others have been rejected. Response to the comments follow.

* * *

[57 Fed. Reg. 2023]

Comment 1. Nine comments indicated that the Office should not amend § 1.56 since it is presently in conformance to the materiality standard being applied by the Court of Appeals for the Federal Circuit. One comment questioned what practical value of the proposed rule would justify the burden of the change.

Reply: The amendment to § 1.56 was proposed to address criticism concerning a perceived lack of certainty in the materiality standard. The rule as promulgated will provide greater clarity and hopefully minimize the burden of litigation on the question of inequitable conduct before the Office, while providing the Office with the information necessary for effective and efficient examination of patent applications.

* * *

[27 Fed. Reg. 2023-24]

Comment 4. One comment stated that promulgation of the proposed rule would result in a significant decrease in the quantity of art cited to the Office because there will be no duty to cite art relevant to a pending claim.

Reply: The Office does not anticipate any significant change in the quantity of information cited to the Office after promulgation of amended § 1.56. Presumably, applicants will

continue to submit information for consideration by the Office in applications rather than making and relying on their own determinations of materiality. An incentive remains to submit the information to the Office because it will result in a strengthened patent and will avoid later questions of materiality and intent to deceive. In addition, the new rules will actually facilitate the filing of information since the burden of submitting information to the Office has been reduced by eliminating, in most cases, the requirement for a concise statement of the relevance of each item of information listed in an information disclosure statement.

* * *

[57 Fed. Reg. 2026]

Comment 24. One comment stated that the language "or in combination with other information" should be removed from proposed § 1.56(b)(1) because it was unworkable to require an applicant to combine references against its own claims, especially since, according to the commentator, examiners and the Board of Patent Appeals and Interferences frequently misapply the law. Another comment stated that the language creates an open field for litigators to claim that an inordinate number of references could be combined.

Reply: The rule does not require an applicant to combine references against its own claims. The applicant can submit information to the Office for the examiner's consideration whether the information is considered material or not. The fact that the teachings of a large number of references must be combined for a prima facie case of obviousness does not by Itself weigh against a holding of obviousness. See *In re Gorman*, 933 F2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

* * *

[57 Fed. Reg. 2026]

Comment 26. One comment stated the proposed § 156(b)(1) placed a burden on the practitioner to analyze references that is inappropriate and contradictory to a practitioner's responsibility to his client.

Reply: The rule itself does not place a burden on the practitioner to analyze references. Information can be submitted to the Office in accordance with §§ 1.97 and 1.98, and the examiner will consider the references.

* * *

[57 Fed. Reg. 2031]

Comment 70. One comment suggested that propoeed § 1.98(a)(3) should be to require a concise explanation of "what is believed to be" the relevance of information listed to avoid the accusation of violation of duty of disclosure merely because more relevant portions of the information are later found, Another comment suggested that the concise explanation should state what is "reasonably understood by the person submitting the statement." Another comment stated that the applicant should be required to explain (1) only what is understood or believed about the item of information at the time the disclosure is made, or (2) why the Item is listed.

Reply: The suggestions in the comments have been substantially adopted in modifying the language of § 1.98(a)(3).

APPENDIX N

(1138 OFFICIAL GAZETTE 37 (May 19, 1992)) (Pertinent Text)

[37] Processing of Information Disclosure Statements Under the New Rules Effective March 16, 1992

The Office has set forth the minimum requirements for information to be considered in 37 CFR 1.97 and 1.98. Once the minimum requirements are met, the examiner has an obligation to consider the information. These rules provide certainty for the public by defining what the requirements are, when the Office will consider information, and when the Office will not consider information.

APPENDIX O

MPEP § 609
(Pertinent Text)

609 Information Disclosure Statement

* * *

An information disclosure statement filed in accordance with the provisions of the 37 CFR 1.97 and 1.98 provides the procedure available to an applicant to submit information to the Office so that the information will be considered by the examiner assigned to the application. The requirements for the content of a statement have been simplified in the new rules which became effective on March 16, 1992, to encourage individuals associated in a substantive way with the filing and prosecution of a patent application to submit information to the Office so the examiner can determine its relevance to the claimed invention. The procedures for submitting an information disclosure statement under the new rules are designed to encourage individuals to submit information to the Office promptly.

In order to have information considered by the Office during the pendency of a patent application, an information disclosure statement in compliance with 37 CFR 1.98 as to content must be filed in accordance with the procedural requirements of 37 CFR 1.97. The requirements as to content are discussed in A below. The requirements based on the time of filing the statement are discussed in B below. Examiner handling of information disclosure statements is discussed in C below.

The Office has set forth the minimum requirements for information to be considered in 37 CFR 1.97 and 1.98. Once the minimum requirements are met, the examiner has an obligation to consider the information. These rules provide certainty for the public by defining the requirements for submitting information to the Office so that the Office will

consider information before a patent is granted. Information submitted to the Office that does not comply with the requirements of 37 CFR 1.97 and 1.98 will not be considered by the Office but will be placed in the application file.

The filing of an information disclosure statement shall not be construed as a representation that a search has been made. 37 CFR 1.97(g). There is no requirement that an applicant for a patent make a patentability search. Further, the filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as denied in 37 CFR 1.56(b). 37 CFR 1.97(h). See MPEP § 2129 regarding admissions by applicant.

* * *

The examiner will consider the documents cited in the international search report in a PCT national stage application, when the Form PCT/DO/EO/903 indicates that both the international search report and the copies of the documents are present in the national stage file. In such a case, the examiner should consider the documents from the international search report and indicate by a statement in the first Office action that the information has been considered. There is no requirement that the examiner list the documents on a PTO-892 form.

A. CONTENT

An information disclosure statement must comply with the provisions of 37 CFR 1.98 as to content in order to be considered by the Office. Each information disclosure statement must comply with the applicable provisions of A(1), A(2), and A(3) below.

A(1) Each information disclosure statement must include a list of all patents, publications, or other information submitted for consideration by the Office.

37 CFR 1.98(b) requires that each U.S. patent listed in an information disclosure statement be identified by patentee, patent number, and issue date. Each foreign patent or published foreign patent application must be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication must be identified by author (if any), title, relevant pages of the publication, date and place of publication. The date of publication supplied must include at least the month and year of publication, except that the year of publication (without the month) will be accepted if the applicant points out in the information disclosure statement that the year of publication is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the particular month of publication is not in issue. The place of publication refers to the name of the journal, magazine, or other publication in which the information being submitted was published.

To comply with this requirement, the list may not be incorporated into the specification, but must be submitted in a separate paper. A separate list is required so that it is easy to confirm that applicants intends to submit an information disclosure statement and because it provides a readily available checklist for the examiner to indicate which identified documents have been considered. A copy of a separate list will also provide a simple means of communication to applicant to indicate the listed documents that have been considered and those listed documents that have not been considered. Use of form PTQ-1449, information Disclosure Citation, is encouraged. See C(2) below.

A(2) In addition to the list, each information disclosure statement must also include a legible copy of:

(i) Each U.S. and foreign patent;

(ii) Each publication or that portion which caused it to be listed; and

(iii) All other information or that portion which caused it to be listed, except that no copy of a U.S. patent application need be included.

There are exceptions to this general rule that a copy must be provided. First, 37 CFR 1.98(d) states that a copy of any patent, publication, or other information listed in an information disclosure statement is not required to be provided if it was previously cited by or submined to the Office in a prior application, provided that the prior application is properly identified in the statement and relied on for an earlier filing date under 35 U.S.C 120. The examiner will consider information cited or submitted to the Office in a prior application relied on under 35 U.S.C 120. This exception to the requirement for copies of information does not apply to information which was cited in an international application under the Patent Cooperation Treaty. If the information cited or submitted in the prior application was not in English, a concise explanation of the relevance of the information to the new application is not required unless the relevance of the information differs from its relevance as explained in the prior application. See A(3) below.

Second, 37 CFR 1.98(c) states that when the disclosures of two or more patents or publications listed in an information disclosure statement are substantively cumulative, a copy of one of the patents or publications may be submitted without copies of the other patents or publications provided that a statement is made that these other patents or publications are cumulative. The examiner will then consider only the patent or publication of which a copy is submitted and will so indicate on the list or form PTO-1449 submitted; e.g., by crossing out the listing of the cumulative information.

37 CFR 1.98(c) further states that if a written English language translation of a non-English language document, or thereof, is within the possession, custody or control of, or is readily available to any individual designated in 37 CFR 1.56(c), a copy of the translation shall accompany the statement. Translations are not required to be filed unless they have been reduced to writing and are actually translations of what is contained in the non-English language information. If no translation is submitted, the examiner will consider the information in view of the concise explanation and insofar as it is understood on its face; e.g., drawings, chemical formulas, English language abstracts, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches.

A(3) Each information disclosure statement must further include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.

The requirement for a concise explanation of relevance is limited to information that is not in the English language. The explanation required is limited to the relevance as understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information at the time the information is submitted to the Office. If a translation of the information into English is submitted with the foreign language information, no concise explanation is required. An English-language equivalent application may be submitted to fulfill this requirement if it is, in fact, a translation of a foreign language application being listed in an information disclosure statement. There is no requirement for the translation to be verified. Submission of an English

language abstract of a reference which does not deal with its relevance to the invention will not fulfill the requirement for a concise explanation. Where the information listed is not in the English language, but was cited in a search report or other action by a foreign patent office in counterpart foreign application, the requirement for concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office. This may be an explanation of which portion of the reference is particularly relevant to which claims it applies, or merely an "X," "Y," or "A" indication on a search report. The requirement for a concise explanation of non-English language information would not be satisfied by a statement that a reference was cited in the prosecution of a United States application which is not relied on under 35 U.S.C. 120.

If information cited or submitted in a prior application relied on under 35 U.S.C. 120 was not in English, a concise explanation of the relevance of the information to the new application is not required unless the relevance of the information differs from its relevance as explained in the prior application.

The concise explanation may indicate that a particular figure or paragraph of the patent or publication is relevant to the claimed invention. It might be a simple statement pointing to similarities between the item of information and the claimed invention. It is permissible but not necessary to discuss differences between the cited information and the claims.

Applicants may, if they wish, provide a concise explanation of why English-language information is being submitted and how it is understood to be relevant. Concise explanations are helpful to the Office, particularly where documents are lengthy and complex and applicant is aware of a section that is highly relevant to patentability. or where a

large number of documents are submitted and applicant is aware that one of more are highly relevant to patentability.

C. EXAMINER HANDLING OF INFORMATION DISCLOSURE STATEMENTS

Information disclosure statements will be reviewed for compliance with the requirements of 37 CFR 1.97 and 1.98 as discussed in A and B above. Applicant will be notified of compliance and noncompliance with the rules as discussed below.

* * *

C(2) Complying Statements

The information contained in information disclosure statements which comply with both the content requirements as discussed in A above and the requirements based on the time of filing the statement as discussed in B above will be considered by the examiner.

Applicants, patent owners, reexamination requesters, protestors, and others are encourage to use form PTO-1449, "Information Disclosure Citation," when preparing an information disclosure statement. A copy of this form is reproduced in this section to indicate how the form should be completed. This form will enable persons to comply with the requirement to list each item of information being submitted and to provide the Office with a uniform listing of citations and with a ready way to indicate that information has been considered. Examiners must consider all citations submitted in conformance with the rules and this section; and their initials when placed adjacent to the considered citations on the list or [600-99] in the boxes provided on a form PTO-1449 provides a clear record of which citations have been considered by the Office. The examiner must also fill in his or her name and the date the information was considered in blocks at the bottom of the PTO-1449 form. If the citations

are submitted on a list other than on a form PTO-1449, the examiner may write "all considered" and his or her initials to indicate that all citations have been considered. If any of the citations are considered, a copy of the submitted list or form PTO-1449, as reviewed by the examiner, will be returned to the applicant with the next communication. Those citations not considered by the examiner will have a line drawn through the citation and any citations considered will have the examiners initials adjacent thereto. The original copy of the list or form PTO-1449 will be entered into the application tile. The copy returned to applicant will serve both as acknowledgement of receipt of the information disclosure statement and as an indication as to which references were considered by the examiner. Forms PTO-326 and PTO-37 include a box to indicate the attachment of form PTO-1449.

Information which complies with requirements as discussed in this section but which is in a non-English language will be considered in view of the concise explanation submitted (A(3) above) and insofar as it is understood on its face; e.g., drawings, chemical formulas, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. The examiner need not have the information translated unless it appears to be necessary to do so. The examiner will indicate that the non-English language information has been considered in the same manner as consideration is indicated for information submitted in English. The examiner should not require that a translation be filed by applicant. The examiner should not make any comment such as that the non-English language information has only been considered to the extent understood, since this fact is inherent.

Since information is required to be submitted in a separate paper listing the citations rather than in the specification. there is no need to mark "All Checked" or "Checked" in the margin of a specification containing citations.

If a statement fails to comply with requirements as discussed in this section for an item of information, a line should be drawn through the citation to show that it has not been considered. The other items of information listed that do comply with the rules and this section will be considered by the examiner and will be appropriately initialed.

C(3) Documents Submitted As Part of Applicant's Response to Office Action

Occasionally, documents are submitted and relied on by an applicant when responding to an Office action. These documents may be relied on by an applicant, for example, to show that an element recited in the claim is operative or that a term used in the claim has a recognized meaning in the art. Documents may be in any form but are typically in the form of an affidavit, declaration, patent, or printed publication.

To the extent that a document is submitted as evidence directed to an issue of patentability raised in an Office action, and the evidence is timely presented, applicant need not satisfy the requirements of 37 CFR 1.97 and 1.98 in order to have the examiner consider the information contained in the document relied on by applicant. In other words, compliance with the information disclosure rules is not a threshold requirement to have information considered when submitted by applicant to support an argument being made in a response to an Office action.

At the same time, the document supplied and relied on by applicant as evidence need not be processed as an item of information that was cited in an information disclosure statement. The record should reflect whether the evidence was considered, but listing on a form (e.g., PTO-892 or PTO-1449) and appropriate marking of the form by the examiner is not required.

For example, if applicant submits and relies on three patents as evidence in response to the first Office action and

also lists those patents on a PTO-1449 along with two journal articles, but does not file a certification or $200 fee, it would be appropriate for the examiner to indicate that the teachings relied on by applicant in the three patents have been considered, but to line through the citation of all five documents on the PTO-1449 and to inform applicant that the information disclosure statement did not comply with 37 CFR 1.97(c).

APPENDIX P

(MPEP § 901.05(d))

901.05(d) Translation

Examiners may consult the translators in the Translation Branch of the Scientific and Technical Information Center (STIC) for oral assistance in translating foreign patents or literature that are possible references for an application being examined. Examiners may also request written translations of pertinent portions of references being considered for citation or already cited in applications. (See MPEP § 901.06(a) Translations and MPEP § 903.03, Classification of Foreign Patents.)

Examiners can request written translations at any point in the examination process, at the discretion of the individual examiner, but are encouraged to use oral assistance and/or language reference resources as much as possible in the early phases of examination.

Equivalent versions of foreign specifications, that is, members of the same patent family, are often available in English or other languages known to the examiner. In addition, copies of previously translated documents are stored in the Translation Branch. Before any translation request is processed, the staff of the Translation Branch checks for equivalents or previous translations. The staff of STIC's Foreign Patents Branch or the Translation Branch can assist examiners in locating equivalents or abstracts. (See MPEP § 901.06(a), STIC Services—Foreign Patent Services.)

APPENDIX Q

(MPEP § 901.06(a))
(Pertinent Text)

901.06(a) Scientific and Technical Information Center (STIC)

The Scientific and Technical Information Center, formerly known as the Scientific Library, is located at CP3/4. Room 2C01. The ST1C maintains three additional satellite information centers: the Biotechnology/Chemical Library in CMI, Room 1C19, the Electronic Information Center in CPK2, Room 4B40, and the Patent Law Library in CPK1, Room 568.

35 U.S.C. 8. Library.

The Commissioner Shall maintain a library of scientific and other works and periodicals, both foreign and domestic, in the Patent and Trademark Office to aid the officers in the discharge of their duties.

Technical literature, foreign patent documents, and reference and online search services available in the Scientific and Technical information Center (STIC) are all important resources for the patent examiner to utilize. These resources provide material which must be known or searched to determine whether claims of applications are directly anticipated and therefore unpatentable under the provisions of 35 U.S.C. 102. STIC handbooks, textbooks, periodicals, reports, and other materials assist examiners in deciding the question of patentable invention in cases in which the primary search indicates that there is some novelty as compared to any single reference in the art (35 U.S.C. 103). These resources enable the examiner to determine whether the features novel in the particular combination searched would be obvious to a person skilled in the art from the general state of knowledge as reflected in the technical literature.

STIC COLLECTIONS

* * *

3. Foreign Patent Documents

The United States Patent and Trademark Office receives foreign patent documents through exchange agreements with almost all countries that print their patent documents. This makes STIC's collection of foreign patent documents the most comprehensive in the United States.

The collection is located in the Foreign Documents Division. The most current part of the collection is made available to examiners and the public through the Foreign Patent Access System (FPAS), a CD-ROM—based local area network in STIC that allows users to look up, view and print documents. The documents from the major industrial countries for the period 1969 to 1990 are found on 16 mm microfilm in the Microfilm Room. The earliest patent documents, back as far as 1617, and documents from smaller countries arc found in the paper collection in the stacks or at remote sites.

Most foreign countries issue official patent and trademark journals corresponding to the *Official Gazette of the United States Patent and Trademark Office*. These journals are shelved under country name. Most countries issue name indexes: some also issue classified indexes. Indexes are shelved with the journals. Much of the index information is also available on FPAS.

The official journals of a few countries include abstracts of the disclosures of the patents announced or applications published.

In addition, the Foreign Patents Branch acquires English language abstracts of foreign patent documents for selected countries published by Derwent. Holdings are in 16mm format from 1972 to date. Earlier holdings are in paper. The

Branch also has unexamined Japanese patent applications abstracted by the Japanese Patent Office, the Patent Abstracts of Japan, from 1977 to date in paper.

Many countries; e.g., China, are providing abstracts of their patent documents on CD-ROM. These abstracts will also be accessible through FPAS.

Many technical abstracting publications include patent literature; the most notable of these is Chemical Abstracts. The annual indexes of Chemical Abstracts include, in addition to the subject matter index, an author index in which the patentee's and inventor's names appear, and patent number lists; corresponding patents of different countries are identified. Specifications of unprinted, or as yet unprinted, patents may be included in some of these abstracting services.

* * *

STIC SERVICES

1. Reference Services

The staff of the Scientific Reference Branch, the Electronic Information Center, the Patent Law Library, and the Biotechnology/Chemical Information Branch assist examiners in the use of the STIC. Upon request, they provide guidance on finding information in the collection. If any problems are encountered in locating materials, using the catalogs or indexing services, or finding answers to informational needs, please check with the staff. They are ready and willing to assist. Queries may be made in person or by telephone.

2. Online Searching

Online computer data base searching is provided by the Scientific Reference Branch, the Electronic Information Center, the Patent Law Library, and the Biotechnology/Chemical Information Branch. All branches have access via modems or the in-house system to a number of

vendors' commercial data base search systems. These vendors' databases extensively cover the field of knowledge and make it possible for online searchers to retrieve bibliographic information with abstracts, chemical structures, DNA sequences, and some-times the full text of the articles, depending on the data-base. This online search service provides a valuable screen of the nonpatent literature for the examiner intending to make a search of the secondary sources of his/her area of interest.

Vendors accessed by STIC staff include DIALOG, ORBIT, DOE/RECON, Chemical Abstracts Services (STN), INPADOC, DataTimes, DATASTAR, DTIC/DROLS, IntelliGenetics, and Mead Data Central. When they are identified as meeting the needs and requirements of the Office, new data base vendors are added. A list of the data bases offered by each vendor is available in the vendors' manuals located in each STIC branch. Examiners may request a computer search by submitting a request form to the appropriate branch. Searches arc usually completed and ready for pickup within 1-2 days.

Examiners are allowed to conduct searches of online commercial databases independently of STIC staff. Training is provided through the Patent Academy and individual assistance is available from the STIC staff, especially for searching chemical structures and DNA sequences.

Online searching of nucleic and amino acid sequences is conducted by the staff of the Biotechnology/Chemical Information Branch through the use of an in house computer network developed for this purpose. Examiners who wish to access the Automated Biotechnology Sequence Search (ABSS) system located in Group 1800 must apply through their SPE to the Biotechnology/Chemical System Branch for an ID and password. On an as needed basis, introductory classes are conducted by STIC staff to assist examiners in understanding the sequence search results.

3. Foreign Patent Services

The staff of the Foreign Patents Branch of the Foreign Document Division is available to assist with any problem or informational need regarding foreign patent searching or foreign patent documents.

Online search services on Orbit/Questel and Dialog (on the basis of Derwent databases) or INPADOC are performed for patent examiners by the Foreign Patents Branch. The services provided include: identification of English-language or preferred-language equivalents; determination of priority dates and publication dates; searches by inventor name or abstract number; other patent family and bibliographic searches; and foreign classification information.

Examiners who choose to perform their own patent searches after receiving appropriate training through the Patent Academy can consult foreign patent experts for difficult searches. In using the Derwent versus the INPADOC databases, examiners should be aware that the systems overlap in coverage and have other similarities. but also differ in format, kinds of searches that can be performed. and patent document and country coverage. Derwent maintains superior coverage of chemical patent documents, while INPADOC includes earlier documents and more countries and has more extensive coverage of mechanical and electrical patent documents than Derwent databases.

The staff of the Foreign Patents Branch can supplement the online searching effort with manual searches of foreign patent journals. including *Official Gazette(s),* patent concordances, and/or indexes. The staff also provides training in the use of the Foreign Patents Access System (FPAS) and information of use of the foreign patent collections.

SPECIAL NOTE: Members of the public can order copies of foreign patent documents. Procedures are outlined in a

brochure entitled, "Foreign Patent Document Copy Orders" available in STIC.

4. Translations

Examiners may consult the translators in the Translations Branch of STIC's Foreign Document Division for oral assistance in translating foreign language patents and other literature sources that are possible references for applications being examined. Oral translations are performed for the major European languages and for Japanese. Examiners may also request written translations of pertinent portions of references being considered for citation or already cited in applications. Full translations are also made upon request. Written translations can be made from virtually all foreign languages into English.

There is a computerized database located in the Translations Branch listing all translations which have been made by the Branch, and a few others gathered from miscellaneous sources. This database lists over 30,000 translations of foreign patents and articles, all of which are located in the Translations Branch. Patent translations are indexed by country and patent number; articles are indexed by language and author or title. Any copies of translations coming to examiners from outside the Office should be furnished to the Translations Branch so that it may make copies for its files.

APPENDIX R

SEL's INFORMATION DISCLOSURE STATEMENT ("IDS")

'636 IDS

Docket: 0756-1354

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit: 2503
Examiner: Team 5
Date: November 15, 1995

In re PATENT application of
Shunpei YAMAZAKI et al.
Serial No. 08/473.953
Filed; June 7, 1995
For: INSULATED GATE FIELD EFFECT TRANSISTOR AND ITS MANUFACTURING METHOD

INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

In accordance with the provisions of 37 C.F.R. 1.56 and 37 C.F.R. 1.97, 1.99. Applicant submits herewith attached Form PTO-1449 listing references known to Applicant and request that these references be made of record in the above identified application. Copies of the references listed are submitted herewith in accordance with 37 C.F.R. 1.98(a). A $210.00 fee in accordance with 37 C.F.R. § 1.17(p) is attached.

Particularly, the following references have come to the attention of Applicant and Applicant hereby requests that these references be made of record in the above identified application.

U.S. Patent 4,460,670 isssued to Ogawa.
U.S. Patent 4,418,132 issued to Yamazaki.
U.S. Patent 4,420,872 issued to Solo de Zaldivar.
U.S. Patent 4,690,717 issued to Yamazaki.
U.S. Patent 4,889,782 issued to Yamazaki.
U.S. Patent 4,889,783 issued to Yamazaki.
Japanese Patent Laid-Open No. 4-49,269.
Japanese Patent Laid-Open No. 55-011329.
Japanese Patent Laid-Open No. 55-029154.
Japanese Patent Laid-Open No. 55-50,663.
Japanese Patent Laid-Open No. 55-50,664.
Japanese Patent Laid-Open No. 57-13,777.
Japanese Patent Laid-Open No. 58-92,217.
Japanese Patent Laid-Open No. 58-155773.
Japanese Patent Laid-Open No. 58-155774.
Japanese Patent Laid-Open No. 58-161380.

Matsumura Japanese Journal of Applied Physics. *(Invited) Amorphous Silicon Transistors and Integrated Circuits.* 1983.

P.C. LeComber. Electronics Letters. *Amorphous-Silicon Field-Effect Device and Possible Application.* 3/15/79.

K. Roy. IEEE Electron Device Letters 1980, and *Affidavit of Chuang Chuang Tsai.*

A brief explanation of the following references not in the English language are further provided to aid in the consideration of these documents. Japanese Patent Laid-Open No. 55-011329 (the inventor named in this laid-open is the same as the applicant for the subject application) was laid-open on January 26, 1980, and teaches that in order to control the Eg of semiconductor layers, oxygen, nitrogen and carbon

is implanted by ion implantation at a concentration of 10^{13} to 10^{22} cm^3, for example, a concentration of 10^{13} cm^3. Japanese Patent Laid-Open No. 55-029154 (the investor named in this laid-open is the same as the applicant for the subject application) was laid-open on March 1, 1980, and teaches that in a junction between two semiconductor layers having different energy band gaps, the band gap is monotonically changed by changing the amount of added impurity (carbon, nitrogen or oxygen) within a concentration range of 10^{25} to 10^{22} cm^3. Thus, both of the foregoing '329 and '154 laid-open is directed to the addition of the impurities rather than the reduction thereof as is the case in the claims of the subject application. Furthermore, these laid-open's are not directed to the specific device structures of the claims of the subject application.

Japanese Patent Laid-Open No. 58-155773 (the inventor named in this laid-open is the same as the applicant for the subject application) was laid-open on September 16, 1983, and shows a semiconductor device formed by laminating semiconductor layers by a multi-chamber system, wherein the concentration of carbon, nitrogen or oxygen in the semiconductor layers is reduced to 3×10^{17} cm^{-3} or lower. Japanese Patent Laid-Open No. 58-155774 (the inventor named in this laid-open is the same as the applicant for the subject application) was laid-open on September 16, 1983, and shows a photoelectric conversion device having laminated semiconductor layers of a different conductivity type, wherein the concentration of carbon, nitrogen or oxygen in the semiconductor layers is reduced to 3×10^{13} cm^{-3} or lower. Japanese Patent Laid-Open No. 58-161380 (the inventor named in this Laid-Open is the same as the applicant for the subject application) was laid-open on September 24, 1995, and shows semiconductor device having laminated semiconductor layers wherein the concentration of carbon, nitrogen or oxygen in the semiconductor layers as measured by IMA (SIMS) is 3×10^{13} cm^{-3} or less. With respect to the

foregoing '773, '774, and '380 laid-opens, it is submitted that. although they are directed to high purity semiconductor, they, like Japanese Laid-Open No. 59-35488 already discussed in allowed parent application Serial No. 08/425,455, are not directed to the specific structure of the semiconductor device as recited in the claims. Accordingly, the '773, '774, and '380 references are not any more relevant than the '488 reference.

Furthermore, the following Japanese Patents disclose the use of silicon nitride for a gate insulating layer of a thin film transistor: 56-135968, 55-50663 and 55-50664.

Japanese Patent Laid-Open No. 57-13,777 teaches the use of a nitrided surface of a semiconductor as a gate insulating layer for a TFT.

Additionally, Japanese Patent Laid-Open No. 56-135968 and the following reference that were noted in an Japanese Opposition against that patent have also come the attention of Applicant and Applicant hereby requests that these references be made of record in the present application.

Japanese Patent Laid-Open No. 56-135968 and Opposition References

Applicant notes the Japanese Patent Laid-Open No. 56-135968 and the following references that were noted in an Japanese Opposition against that patent. A partial translation of this patent and of the references not in the English language is further provided to aid in the consideration of these documents. Japanese Patent Laid-Open No. 56-135968 was filed in Japan on March 27, 1980 and was published on October 23, 1981. Applicant is not aware of any corresponding U.S. patents equivalent to this Japanese application. Copies of these references are provided and Applicant requests that these references be considered and made of record in the present application.

(1) Philosophical Magazine, 1976. Vol. 33. No. 6, 935-949 "Electronic Properties of Substitutionally Doped Amorphous Si and Ge", W.E. Spear et al., 1976.

(2) Physics of Semiconductor Devices, pages 568-621; S.M. Sze. 1969.

(3) Applied Physics Letters, Vol. 34, pp 234-236. "Electronic Density of States in Discharge-Produced Amorphous Silicon", M. Hirose et al., 2/1/79.

(4) Extended Abstracts (The 40th Autumn Meeting) The Japan Society of Applied Physics, page 325, 30P-S-17. Nakamura et al., 9/79.

(5) Proceedings of the 10th Conference on Solid State Devices. JAP. Vol. 18, p 109-113. "Determination of Localized State Density Distribution in Glow Discharge Amorphous Silicon." Hirose et al., 1979.

(6) ExtendedAbstracts (The 40th Autumn Meeting) The Japan Society of Applied Physics. page 326, 3OP-S18. Matsumura et al., 1979.

(7) A Journal of Theoretical Experimental and Applied Physics. "Localized States in the Mobility Gap of Amorphous Quartz and Glass", page 839-851. Anderson, 1974.

(8) Physics of Semiconductor Devices, page 32, S.M. Sze. 1981.

(9) National Convention Record. The Institute of Electronics and Communication Engineers of Japan. 2-281-282. Matsumura et al., 3/80.

(10) Proc. 7th Intern. Vac. Congr. & 34d Intern. Conf. Solid Surfaces "Preparation and Reliability of Thin Film Transistors Based on CdSe", M.J. Lee, 1979.

(11) Solid State Communications, Vol. 17, No. 9, pp. 1193-1196 "Substitutional Doping of Amorphous Silicon", Spear et al., 1975.

(12) National Convention Record. The Institute of Electronics and Communication Engineers of Japan. 2-287-288. Matsumura et al., 3/80.

(13) The Transactions of The Institute of Electronics and, Communication Engineers of Japan. Vol. 363-C No. 2 pp. 128-129. "Amorphous Silicon Thin Film MOS Transistors". Matsumura et al., 2/80.

(14) National Convention Record. The Institute of Electronics and Communication Engineers of Japan. 2-285-286. Matsumura et al., 3/80.

(15) Extended Abstracts (The 26th Spring Meeting) The Japan Society of Applied Physics and Related Societies, page 326. Matsumura et al., 3/79.

(16) Optoelectronics, Vol. 4, No. 2, pp 209-222. "Active Matrix Addressed Liquid Crystal Displays Using Amorphous Silicon Thin Film Transitors. Ibaraki et al., 12/89.

(17) Journal of Non Crystalline Solids 8-10, 727-738. "Investigation of the Localized State Distribution in Amorphous Si Fllms". Spear et al., 1972.

(18) Electronics Letters, Vol. 15, No. 6, 179-181. "Amorphous-Silicon Field-Effect Device and Possible Application. Le Comber. 3/79.

(19) Extended Abstracts (The 26th Spring Meeting) The Japan Society of Applied Physics and Related Societies, page 143, 27P-E-15. Suzuki et al., 1978.

(20) Japanese Patent Laid-Open No. 54-152894. Ohtake. 12/1/79.

(21) U.S. Patent No. 4.055.884, Jambotkar. 12/13/76, and

(22) U.S. Patent No. 3.999.212. Usuda, 3/4/68

Applicant further provides the following comments to assist the Examiner in considering the information cited therein.

Specifically, with respect to this section ertitled *Japanese Patent Laid-Open No. 56-135968 and Opposition References* the following concise statement of relevance as it is presently understood by the person most knowledgable about the contents of several documents not in the English language is provided to facilitate consideration of these documents by the Examiner.

Specifically, reference (4) to Nakamura entitled *Extended Abstracts (The 40th Autumn Meeting) The Japan Society of Applied Physics* discloses a TFT having a silicon gate and an amorphous silicon channel layer, reference (15) to Matsumura entitled *Extended Abstracts (The 26th Spring Meeting) The Japan Society of Applied Physics and Related Societies* discloses a fabrication method of a TFT in which a surface of a single crystalline silicon substrate (functioning as a gate) is thermally oxidized to form a gate oxide, as N layer is then deposited and patterned as a channel layer, and n+ layers are then formed as source and drain; and Japanese Patent Laid Open No. 54-152894 (Reference 20) to Ohtake discloses a TFT having a glass substrate 401, drain 403, source 404, gate insulator 405 and gate electrode 406. It is further noted that reference (15), which is not in English is exactly the same as reference (6), which is in English.

With respect to several of the other documents in the section entitled *Japanese Patent Laid-Open No. 56-135968 and Opposition References* the following comments are further offered to assist the Examiner in his review thereof. The Examiner's attention is particularly directed to Reference (18) to Le Comber et al., which appears to disclose the use of a silicon nitride layer as a gate insulating layer.

Reference (9) to Matsumura teaches the use of a non-doped amorphous silicon layer (n-layer) as a channel layer, but does not teach the formation of source and drain semiconductor regions. Reference (12) to Matsumura teaches a TFT having a non-doped i-type amorphous silicon film formed on a glass substrate, n+ layers as source and drain regions formed on the i-type silicon film and a silicon oxide (SiO_2) layer as a gate insulating layer.

References (13) and (14) to Matsumura shows a TFT of which structure appears to be the same as that disclosed in references (6) and (15). Reference (13) appears to be directed to a case in which the channel region is non-doped.

Reference (16) to Ibaraki et al. is dated December 1989 so it is not believed to be available as prior art. In any event, this reference appears to disclose the use of a silicon nitride layer as a gate dielectric layer. Reference (19) to Suzuki et al. discloses a TFT having an n-type a-Si channel layer and n+ source and drain regions. Reference (20) to Ohtake discloses a TFT having a glass substrate, drain, source, gate insulator and gate electrode.

Cross Reference to Related Applications

The present application includes a number of related applications which are discussed in greater detail below, and Applicant requests that the references which have been made of record in these related applications be considered in the present application. Applicant has attempted to organize this information to facilitate review by the Examiner and will promptly provide any additional information that the Examiner believes will facilitate consideration and review of these references.

Specifically, the present application is a divisional of Serial No. 08/425,455, filed April 20, 1995 (allowed), which was a continuation of Serial No. 08/214,494 filed March 18, 1994

(abandoned), which was a divisional of Serial No. 07/987,179 filed December 8, 1992 (now U.S. Patent No. 5,315,132), which was a divisional of Serial No. 07/885,643 filed May 19, 1992 (abandoned), which was a divisional of Serial No. 07/707,178 (now U.S. Patent No. 5,142,344), which was a continuation of Serial No. 07/520,756 filed May 9, 1990 (now abandoned), which was a divisional of Serial No. 07/153,477 filed February 3, 1981 (now U.S. Patent No. 4,959,700), which was a continuation of Serial No. 06/735,697 filed May 20, 1985 (now abandoned).

Additionally, Serial No. 735,697 included another divisional application. Serial No. 06/912,498, which issued as U.S. Patent No. 4,727,044. Furthermore, Serial No. 07/885,643 included another divisional application. Serial No. 07/987,160 filed December 8, 1992 (now abandoned), which included a continuation application. Serial No. 08/386,187 filed February 9, 1995 (currently pending), and the '643 application also included a continuation application. Serial No. 08/171,769 filed December 22, 1993 (currently being appealed). Additionally, Serial No. 987,179 included another divisional application. Serial No. 08/214,550 filed March 18, 1994 (now abandoned), which included a continuation application. Serial No. 08/426,487 filed April 20, 1995 (currently pending).

Applicant understands that many of the references of record in these applications should have already been considered by the Examiner in the present application pursuant to M.P.E.P. § 609 which states:

> Information which is cited or submitted to the Office in the parent application of a file wrapper continuing application under 37 CFR § 1.62 will be part of the file before the examiner and need not be resubmitted in the continuing application. Likewise, the examiner will consider information cited or submitted to the Office in a parent application when examining a continuing

application, and a list of the information need not be submitted in the continuing application unless applicant desires the information to be printed on the patent.

In accordance with the last portion of this statement, Applicant wishes to ensure that all references considered by the Examiner in the present application are printed on any patent that issues from this application. A list of the information cited or submitted to the Office in the above-listed related applications is submitted herewith in order to comply with this provisions of § 609 of the M.P.E.P. to ensure printing on any issued patent.

Applicant also notes 37 C.F.R. § 1.98(d) that provides that copies of information are not required if that information was previously cited by or submitted to the Office in a prior application, provided that the prior application is properly identified in the statement and relied upon for an earlier filing date under 35 U.S.C. § 120. For a number of the related applications discussed below, it is noted that the present application relies upon these applications for an earlier filing date under 35 U.S.C. § 120 and therefore copies of the references in these applications are not submitted in accordance with 37 C.F.R. § 1.98(d).

The above-described family of related applications will now be discussed in further detail.

Related Application Serial No. 08/425,455

The references listed below have been cited to the Patent Office in a form PTO-1449 or cited by the Patent Office in a PTO-892 during the prosecution of Application Serial No. 08/425,455, from which the '953 application is a Rule 60 divisional. Accordingly, these references should have been considered by the Examiner and are listed herein to ensure their printing on the front of any patent that issues in the present application. Copies of these references are not required in accordance with 37 C.F.R. § 1.98(d) in that the

present application relies upon this application for an earlier filing date under 35 U.S.C. § 120.

U.S. Patent 3,304,469 issued to Weimer.
U.S. Patent 4,072,974 issued to Ipri.
U.S. Patent 4,113,514 issued to Pankove.
U.S. Patent 4,196,438 issued to Carlson.
U.S. Patent 4,239,554 issued to Yamazaki.
U.S. Patent 4,263,057 issued to Ipri.
U.S. Patent 4,272,880 issued to Pashley.
U.S. Patent 4,353,085 issued to Sakurai.
U.S. Patent 4,377,902 issued to Shinada et al.
U.S. Patent 4,406,709 issued to Celler.
U.S. Patent 4,459,739 issued to Shepherd et al.
U.S. Patent 4,463,492 issued to Maeguchi.
U.S. Patent 4,466,171 issued to Jochems.
U.S. Patent 4,468,855 issued to Sasaki.
U.S. Patent 4,470,060 issued to Yamazaki.
U.S. Patent 4,476,485 issued to Naem et al.
U.S. Patent 4,514,895 issued to Nishimura.
U.S. Patent 4,523,368 issued to Feist.
U.S. Patent 4,578,304 issued to Tanaka et al.
U.S. Patent 4,591,892 issued to Yamazaki.
U.S. Patent 4,611,220 issued to MacIver.
U.S. Patent 4,619,034 issued to Janning.
U.S. Patent 4,667,217 issued to Janning.
U.S. Patent 4,727,044 issued to Yamazaki.
U.S. patent 4,766,477 issued to Nakagawa et al.
U.S. Patent 4,959,700 issued to Yamazaki.
U.S. Patent 5,142,344 issued to Yamazaki.
Japanese Patent Laid-Open No. 56-135,972.
Japanese Patent Laid-Open No. 59-35,423.
Japanese Patent Laid-Open No. 59-35,488.
Japanese Patent Laid-Open No. 59-72,128.
Japanese patent Laid-Open No. 59-72,182.

R.A. Lemons et al., *Laser Crystallization of Si Films on Glass*. Appl. Phys. Lett. Vol. 40, No. 6, March 15, 1982, pp. 469-471.

C.C. Tsai, Journal of Non-Crystalline Solids. *Amorphous Si Prepared in a Ubv Plasma Deposition System*, Dec. 1983.

G. Yaron & L.D. Hess, *Application of laser appealing techniques to increase channel mobility in silicon on sapphire transistor*. Appl. Phys. Letts. Vol. 36, No. 6, 1 Feb. 1980, pp. 220-222, and

T.I. Kamins, IEEE Electron Device Letters, *MOSFET's in Laser-Recrystallized Poly-Silicon on Quartz*. Oct. 1980.

Related Application Serial No. 06/735,697

The following references have been cited to the Patent Office in a form PTO-1449 or cited by the Patent Office in a PTO-892 during the prosecution of Application Serial No. 06/735,697, from which the 07/153,477 application was a Rule 62 continuation. Accordingly, these references should have been considered by the Patent Office and printed on any patent issuing from the present application in accordance with M.P.E.P. § 609. Copies of these references are not required in accordance with 37 C.F.R. § 1.98(d) in that the present application relies upon this application for an earlier filing date under 35 U.S.C. § 120.

U.S. Patent 4,598,304 issued to Tanaka.

Related Applications Serial Nos. 07/687,745 and 08/054,842.

As noted above, in addition to continuation application Serial No. 07/707,178 (which led to the present application) of application Serial No. 07/520,756, another divisional of the '756 application was filed as Serial No.07/687, 745. The '745 application was further abandoned in favor of Rule 62 continuation filed as Serial No. 08054842 which issued as U.S. Patent 5,313,077, Therefore the following references

which were cited to the Patent Offices is a form PTO-1449 or cited by the Patent Office is a PTO-892 during the prosecution the '745 and '842 applications are provided herein for consideration by the Examiner. Copies of the references in accordance with 37 C.F.R. § 1.98 are also enclosed.

U.S. Patent 4,823,180 isssued to Weider.

Related Applications Serial Nos. 07/987,160 and 08/386,187

As noted above, in addition to divisional application Serial No. 07/987,179 (which led to the present application) of application Serial No. 07/885,643, another divisional of the '643 application was filed as Serial No. 07/987,160. The '160 application was further abandoned in favor of Rule 62 continuation filed as Serial No. 08/386,187. The '643 application was further abandoned in favor of Rule 62 continuation filed as Serial No. 08/171,769. Therefore, the following references which were cited to the Patent Office in a form PTO-1449 or cited by the Patent Office in a PTO-892 during the prosecution of the '160, '187 and '769 applications are provided herein for consideration by the Examiner. Copies of the references in accordance with 37 C.F.R. § 1.98 are also enclosed.

U.S. Patent No. 4,529,617 issued to Chenevas-Paule et al.

U.S. patent No. 5,315,132 issued to Yamazaki.

T. Unagami et al., *High-Voltage Silicon Thin Film Transistor*, IEEE, Dev. Lett. Vol. EOL-3, No. 6, June 1982, pp. 167-68, and

T. Stultzn et al., *Bearn Processing of Silicon with a Scanning CW Hg Lamp.* Laser Solid Interaction and Transient Thermal Processing of Materials. Materials Research Society Symposia Proceedings, Volume 13 (1983), pp. 463-476.

Related Applications Serial Nos. 08/214,550 and 08/426,487

As noted above, in addition to divisional application Serial No. 08/214,494 (which led to the present application) of application Serial No. 07/987,179, another divisional of the '179 application was filed as Serial No. 08/214,550. The '550 application was further abandoned in favor of Rule 62 continuation filed as Serial No. 08/426,487. Therefore, the following references which were cited to the Patent Office in a form PTO-1449 or cited by the Patent Office in a PTO-892 during the prosecution of the '550 and '487 applications are provided herein for consideration by the Examiner. Copies of the references in accordance with 37 C.F.R. § 1.98 are also enclosed.

U.S. Patent 4,220,483 issued to Cazcarra.
U.S. Patent 4,769,338 issued to Ovshinsky et al., and
U.S. Patent 5,094,963 isued to Hiraguchi et al.,
Ghandhi, *VLSI Fabrication Principle, Silicon & Gallium Arsenide*, 1983, pp. 23-29, and
C. Mager et al., "Investigations of the Hydrogen and Impurity Contents of Amorphous Silicon by Secondary Ion Mass Spectrometry", *Solar Cells*, Vol. 2 (1980), pp. 365-376.

Related Application Serial No. 08/350,169

The above '169 application, although not in the above-described family of related applications, is also related to the subject application and information from the above '169 application and its family are included in the information discussed hereinbefore.

As noted above, consideration of the information and documents discussed herein is requested. If the Examiner feels that any further discussions would expedite the prosecution of this application or requires any further information to fully consider the enclosed information, it is

requested that the undersigned be contacted so that such information can be promptly provided.

Other Related Applications

The following applications also contain similar subject matter to the subject application: Serial No. 08/396,780 (currently pending), Serial No. 08/310,364 (currently pending), Serial No. 08/213,837 (currently pending), Serial No. 08/183,800 (currently pending), Serial No. 08/095,172, Serial No. 07/853,690 (now issued as U.S. Patent No. 5,313,076).

Respectfully submitted,

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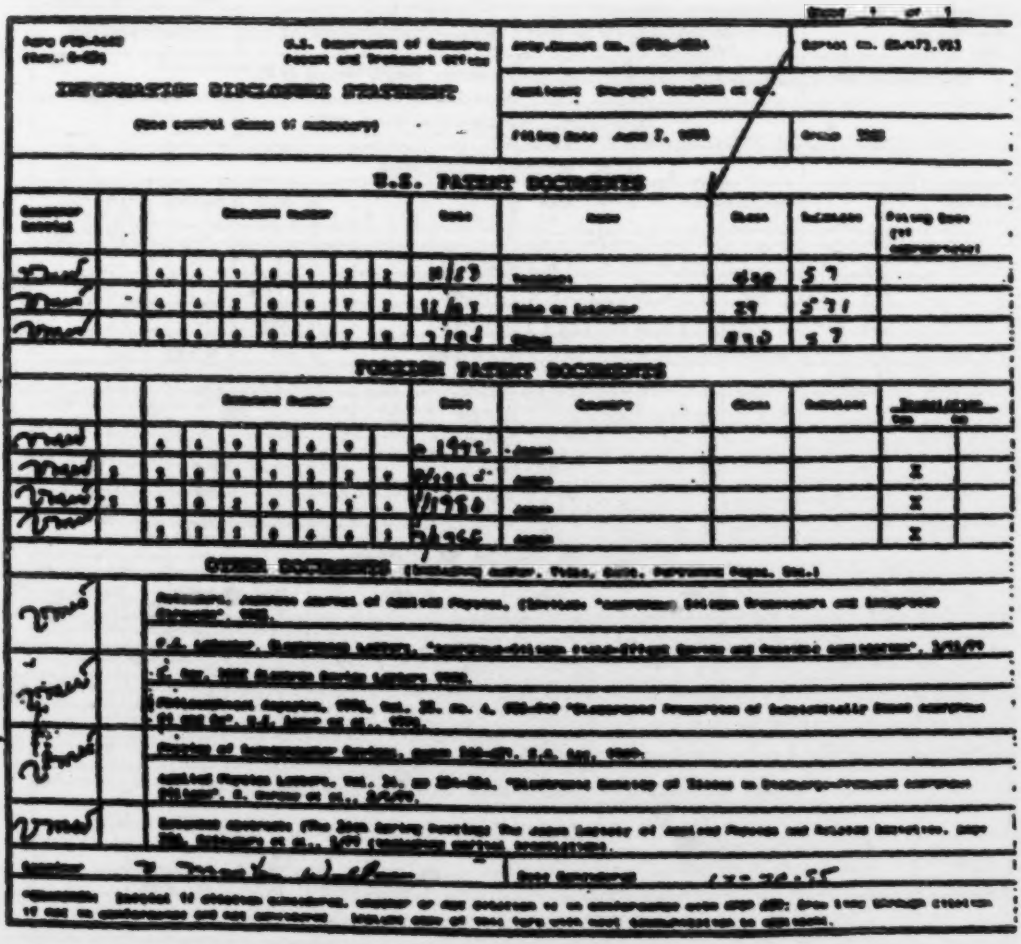

INFORMATION DISCLOSURE STATEMENT

U.S. PATENT DOCUMENTS

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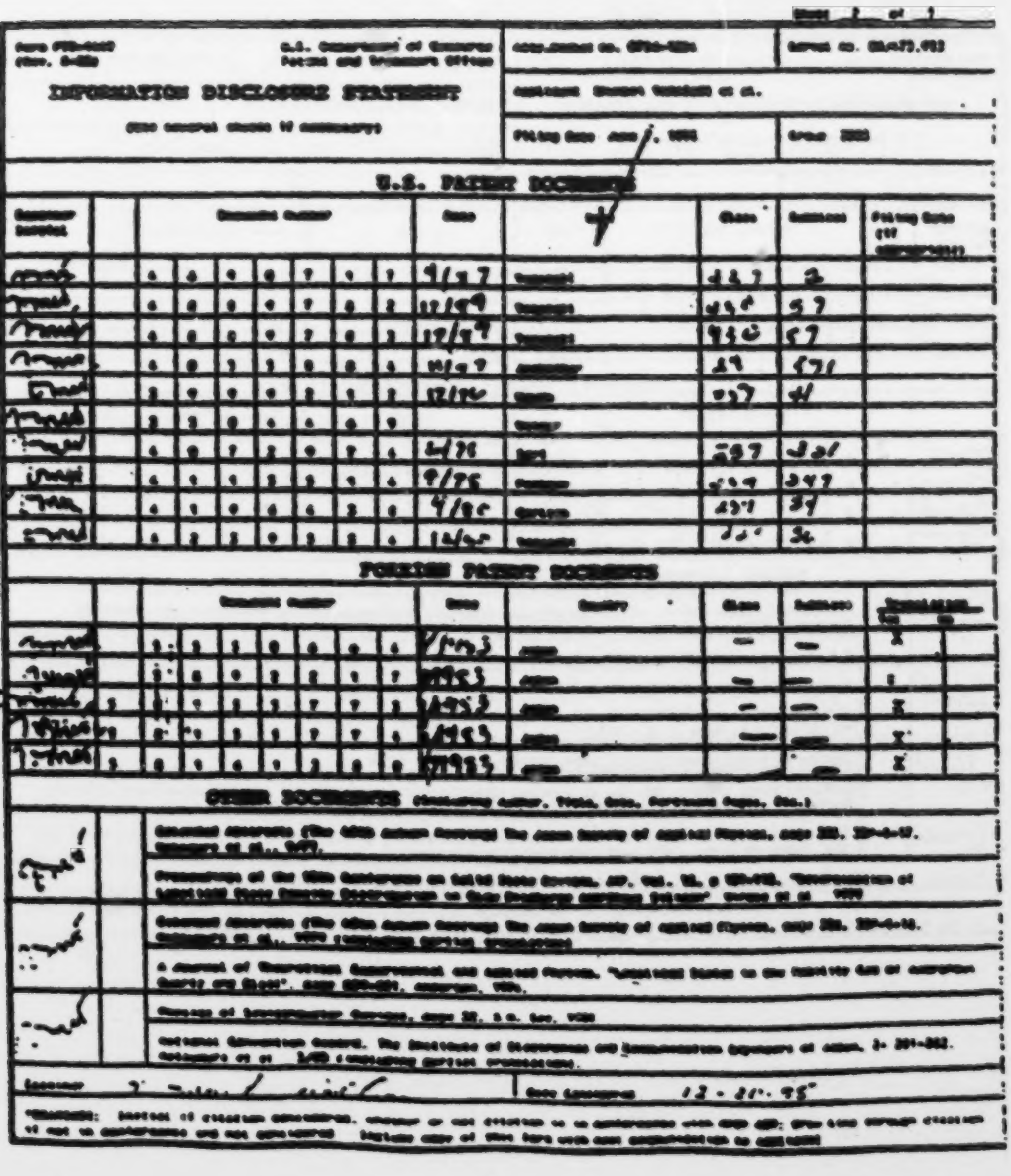

INFORMATION DISCLOSURE STATEMENT

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

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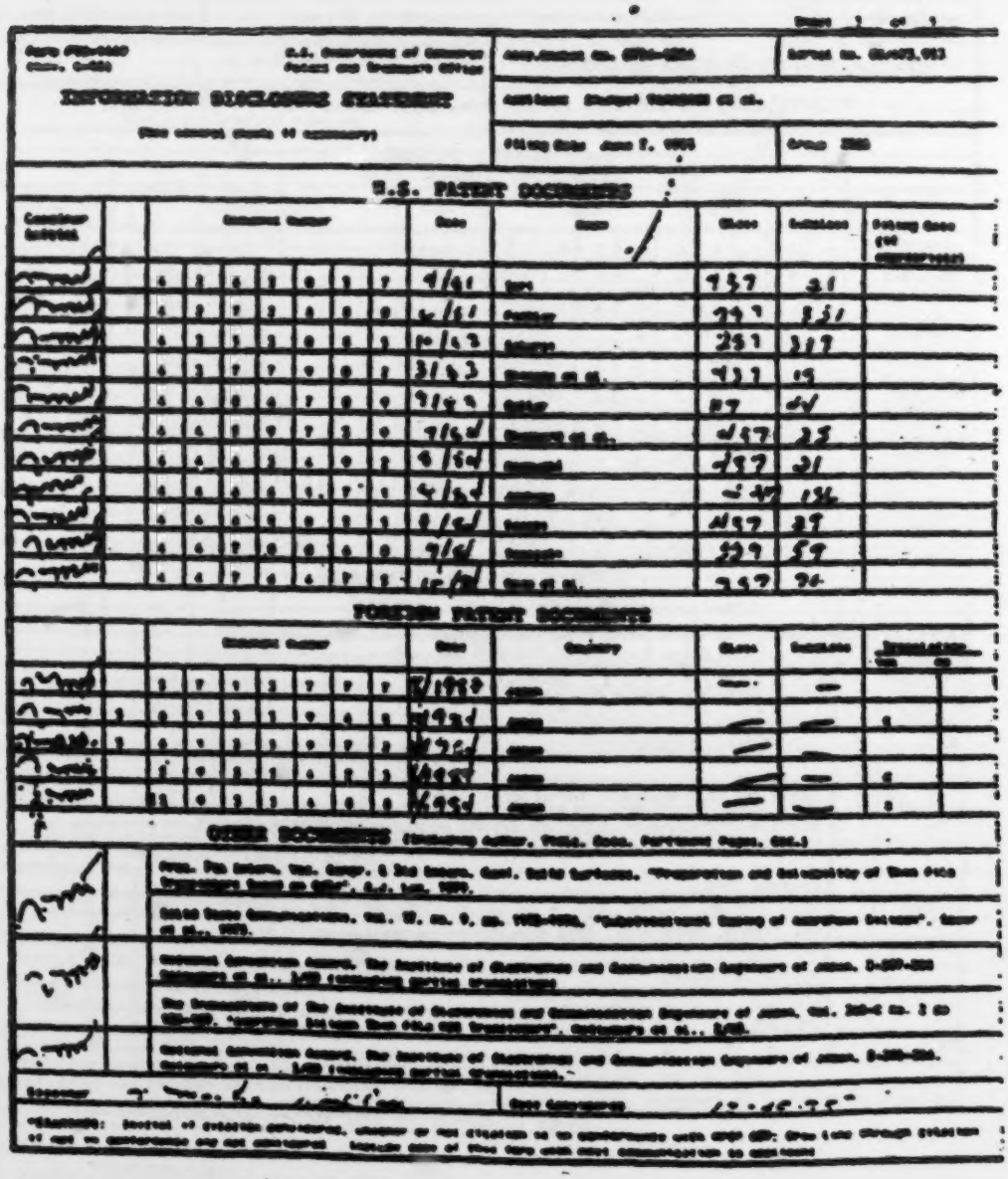

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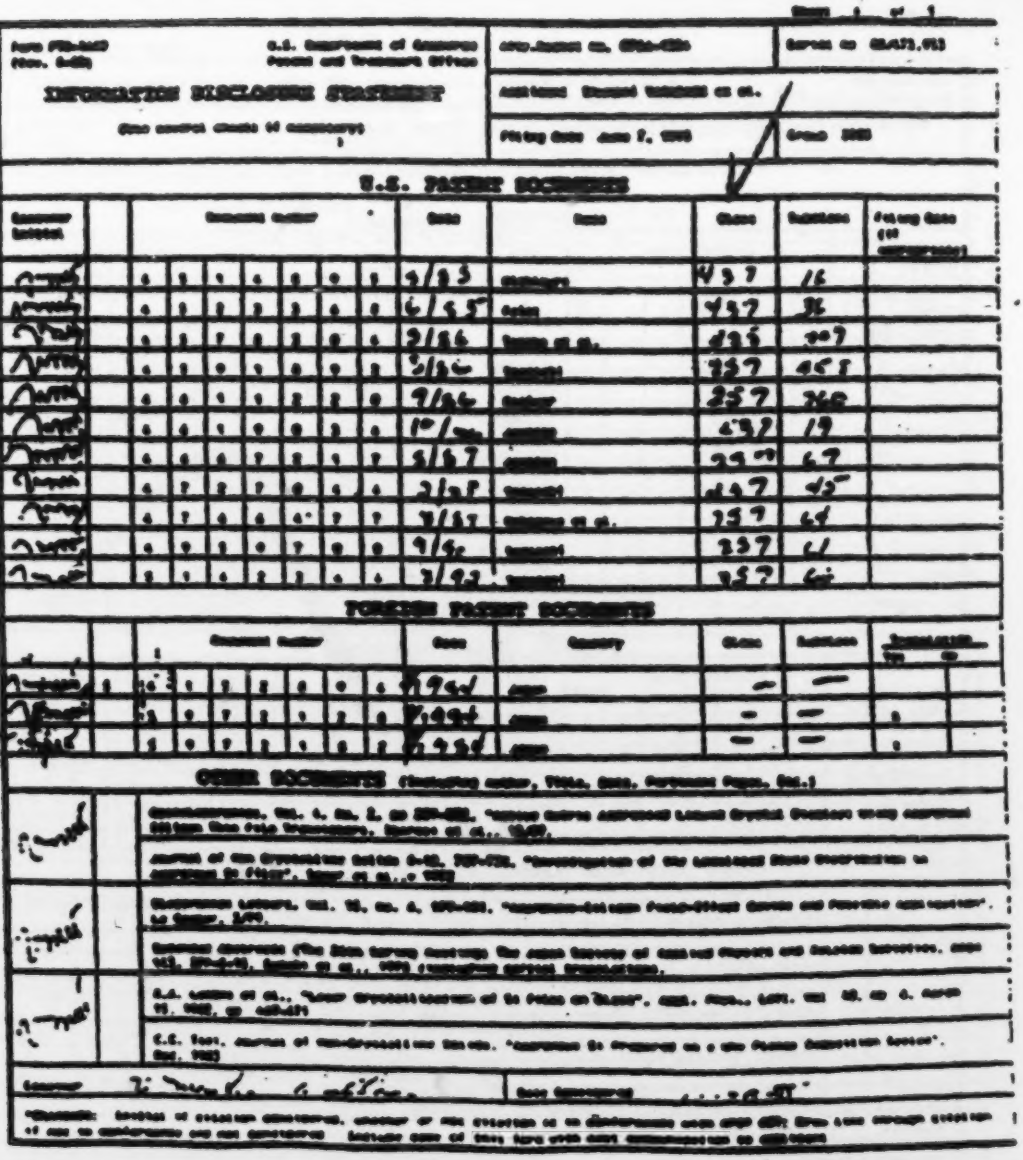

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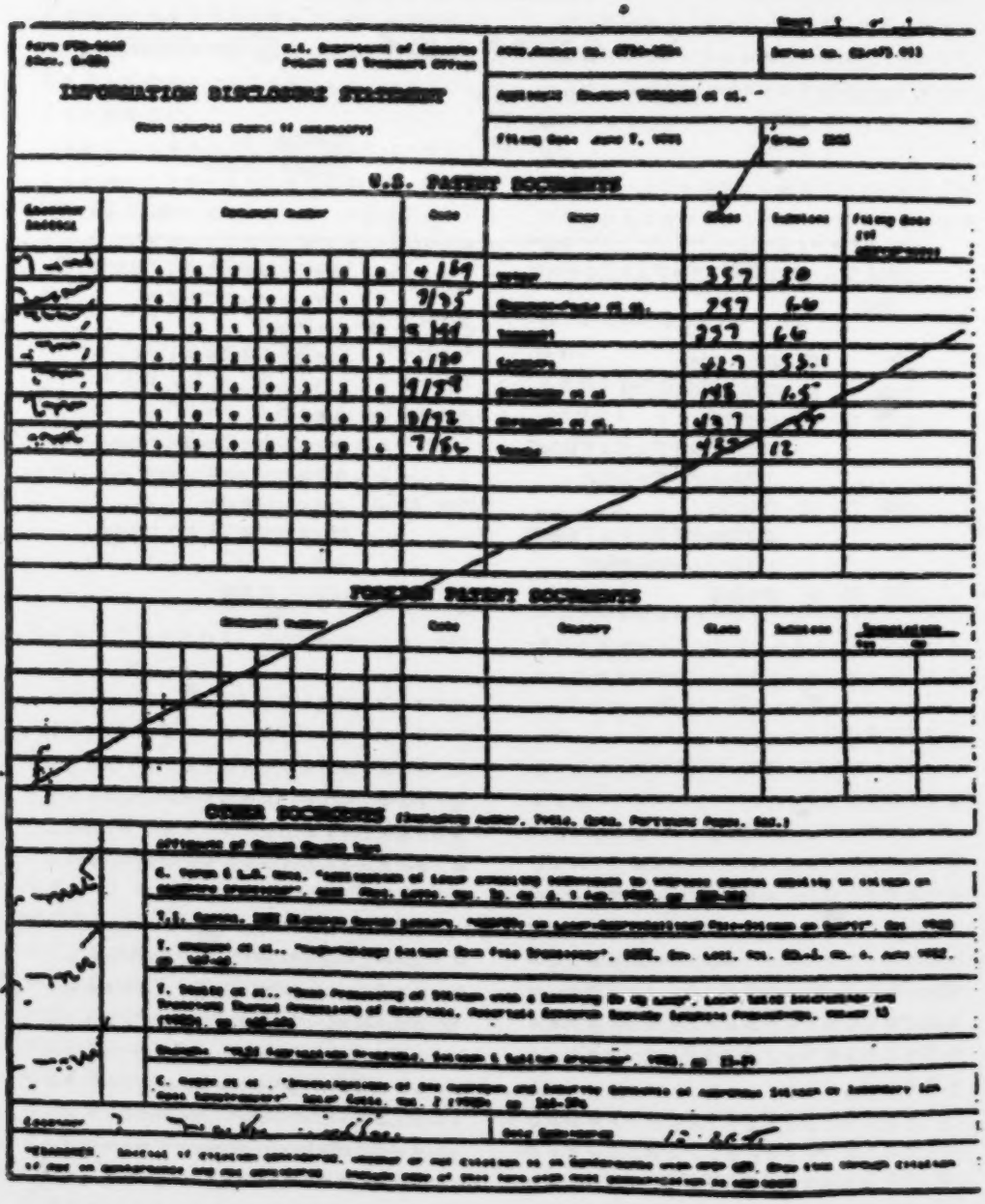

INFORMATION DISCLOSURE STATEMENT

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

OTHER DOCUMENTS

SEC 027894

APPENDIX S

(Canon '968 Patent)

⑲公開特許公報(A)　昭56—135968

⑤Int. Cl.³	識別記号	庁内整理番号	⑬公開　昭和56年(1981)10月23日
H 01 L 29/78		6603—5F	
29/04		7514—5F	

発明の数　3
審査請求　未請求

(全11頁)

⑭非晶質シリコン薄膜トランジスタ及びその製造法

⑳特　願　昭55—28251
㉒出　願　昭55(1980)3月27日

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明　細　書

1. 発明の名称

非晶質シリコン薄膜トランジスタ及びその製造法

2. 特許請求の範囲

(1) 水素化又は／及び弗素化の非晶質シリコンからなる半導体層、該層上に電気的な絶縁層を介して設けたゲート電極、該半導体層のクリーンサーフェスに互いに離されて互例に形成された非晶質シリコンを母体とする第1のn⁺層及び第2のn⁺層、第1のn⁺層上に形成されたソース電極、第2のn⁺層上に形成されたドレイン電極とで形成されていることを特徴とする非晶質シリコン薄膜トランジスタ。

(2) n⁺層の比抵抗値が10Ωcm以下である特許請求の範囲第1項の非晶質シリコン薄膜トランジスタ。

(3) 絶縁にし得る基板上に設けられ、ゲート電極と電気的な絶縁層とが形成されてなる非晶質シリコン薄膜トランジスタ形成用の基板上で、且つ前記絶縁層上に非単結晶質を所定の真空度にして形成又は／及び弗素化非晶質シリコンからなる半導体層を形成した後、引続き非晶質シリコンを母体とするn⁺層を形成する際、該n⁺層を2つの互いに離された第1のn⁺層と第2のn⁺層とに分離すること、その後、前記第1のn⁺層にソース電極を前記第2のn⁺層上にドレイン電極を形成することを特徴とする非晶質シリコン薄膜トランジスタの製造法。

(4) 半導体層を形成した後、該層を大気に対せずに引続いてn⁺層を形成する特許請求の範囲第3項の非晶質シリコン薄膜トランジスタの製造法。

(5) 半導体層が、シリコンと水素との化合物又は／及びシリコンと弗素との化合物のグロー放電による分解に基づいて形成される特許請求の範囲第3項の非晶質シリコン薄膜トランジスタの製造法。

(6) グロー放電を開始した後で半導体層とn⁺層とを連続的に形成する特許請求の範囲第4項の非晶質シリコン薄膜トランジスタの製造法。

(7) グロー放電放圧を一定にする特許請求の範囲第5項及び同第6項の非晶質シリコン薄膜トランジスタの製造法。

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(3) pn接合、非晶質シリコンを形成する化合物に、ほう素との化合物又は／及び周期表とほう素との化合物とを含有し、これらの化合物のグロー放電による分解について形成される特許請求の範囲第1項の非晶質シリコン薄膜トランジスタの製造法。

(4) 水素を含有ガスとして使用する特許請求の範囲第3項及び第8項の非晶質シリコン薄膜トランジスタの製造法。

(5) 前記において、非晶質シリコンを主体とするpn接合を形成する際に、pn接合を2つの工程に分割され第1のpn接合と第2のpn接合とで形成する方法において、第1のpn接合上にソース電極を、第2のpn接合上にドレイン電極を形成するが、前記第1のpn接合と第2のpn接合とが分割された部分に電気的な絶縁物を形成するか、基板部分上にゲート電極を形成するかを特徴とする非晶質シリコン薄膜トランジスタの製造法。

(6) 半導体層を形成した後、基板を大気にふれさせることなく引続いてpn接合を形成する特許請求の範囲第10項の非晶質シリコン薄膜トランジスタの製造法。

(7) 半導体層が、シリコンと水素との化合物又は／及びシリコンと窒素との化合物のグロー放電による分解について形成される特許請求の範囲第10項の非晶質シリコン薄膜トランジスタの製造法。

(8) グロー放電を利用した装置で半導体層とpn接合を連続的に形成する特許請求の範囲第12項の非晶質シリコン薄膜トランジスタの製造法。

(9) グロー放電装置を一定にする特許請求の範囲第12項の非晶質シリコン薄膜トランジスタの製造法。

3. 発明の詳細な説明

本発明は、非晶質シリコンを用いた薄膜トランジスタ及びその製造法に関する。

従来、水素化非晶質シリコン (a-Si:H) を用いた薄膜トランジスタ (TFT) が提案され予備的用の

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トランジスタとして使用されるのが、D. LeComber らによって初めて示された (Electronic Letters 15, 179 — 181 (1979))。

その特長は、基板上に、ゲート電極、絶縁ゲート電極を介して設けられた水素化シリコンから成る真性および導電上にa-Si:Hから成るソース電極及びドレイン電極とを設けたものである。

この様な構造のa-Si:H-TFTはゲート電極に一定電圧 (V_G) を印加し、ソース電極とドレイン電極間の電圧 (V_D) を変化させた時のソース電極とドレイン電極間を流れる電流 (I_D) は、V_Gが十分大きい領域で飽和傾向を示す。即ちある領域を示さない。また、前述V_G-I_D特性がV_Gの小さい領域において電流的にならずにV_G-I_D特性曲線が立ち上がりのよい良好なトランジスタ特性を示さない。これらは、a-Si:Hから成る半導体層とその上のオーミックな接触が形成されていないために起こっている。

本発明は、かかる点に鑑み成されたものであって、V_G-I_D特性曲線に折れのない好ましいトランジスタ特性を示す非晶質シリコン (a-Si) TFTの提供及びその製造法を提供することを目的とする。

本発明のa-Si-TFTは、水素化又は／及び水素化の非晶質シリコンから成る半導体層、絶縁上に互いな絶縁物を介して設けたゲート電極、前記半導体層のウィンドウエリアに互いに絶縁されて設けられた、ほう素シリコンを主体とするn1のpn接合及びn2のpn、n1のpn上に形成されたソース電極、n2のpn上に形成されたドレイン電極とで形成されていることを特徴とする。

又、本発明の製造法は、前記に記載する構成において、ゲート電極と互いな絶縁物とが形成されてある非晶質シリコン薄膜トランジスタ形成用の基板上で、且つ前記絶縁上に真空槽を介在の入替えによって水素化又は／及び水素化非晶質シリコンから成る半導体層を形成した後、引続き、ある導電シリコンを主体とするpn接合を形成するが、このpn接合を二つの工程に分割されたn1のpn接合とn2のpn接合とに形成するが、その後、前記ゲ

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1のゲ[illegible]にソース電極を形成及び2のゲ[illegible]上にドレイン電極を形成するステップを特徴とする。又、更には、本発明の製造法としての特徴は、基板にしみる程度に塗布された非晶質シリコン膜とリンリュウ膜成膜のあと上に、同じ電極形状を形成の為更に成して、水素化又は／及び非晶質非晶質シリコンから成るやわらかを形成した後、引続いて、非晶質シリコンを形成とするゲートとの間やはり上に形成するロ／ロゲ[illegible]を2つの互いに離れされた}のゲ[illegible]と第2のゲ[illegible]とに分割するステップと第1のゲ[illegible]上にソース電極を、第2のゲ[illegible]上にドレイン電極を形成するステップと前記第1のゲ[illegible]と第2のゲ[illegible]とが離されたあとに電極を電極部を形成するステップと最後に上にゲート電極を形成するステップとを有するのが特徴。

以下、本発明を図面に従って具体的に説明する。

第1図は、本発明の非晶質シリコン膜トランジスタのもとを示す模式的な断面図を示してある。

第1図に示される[illegible]、ガラス、セラミックスなどから成る基板104上に、ゲート電極101、

ゲート電極101を覆うように電気的な絶縁膜104及び水素化又は／及び非晶質非晶質シリコンから成る中間層105を形成形成してある。その層105の層106上には電極領域ではなくて第1のゲ[illegible]107-1、第2のゲ[illegible]107-2が設けられ、第1のゲ[illegible]107-1上にはソース電極102、第2のゲ[illegible]107-2上にはドレイン電極103がもうけられた構造をもした構成とされてある。

本発明に於いては、中間層105上の層(クリーンマークス)106に接してもうけられる第1のゲ[illegible]107-1及び第2のゲ[illegible]107-2は、中間層105を形成した後、連続層106を大気又は真空に触すことなく形成されるものである。

この為に、中間層105の層106が形成された後のクリーンな状態の中に、ゲ[illegible]を形成することによって中間層105とゲ[illegible]107との界面において、清浄なヴァージャス状態が形成され、ヴォーム特有の電気的に悪影響のないきれたトランジスタ特性をホトーカーマが得られる。

本発明に於いて、ゲート電極101、ソース電極

102及びドレイン電極103のを電極を形成する材料としては、Al, Mo又はこれ等の合金Mo, Ta, Ti等が可能なものとして使用され得、その他の材料としては第3図-a, 第2図-bとされ、非晶質非晶質等の選定の電極形成法に従って形成される。

電気的な絶縁膜104は、スパッタ法によるSiO₂膜、グロー放電分解法による窒化シリコン膜等で形成され、この外、Al₂O₃でも好適な材料として使用される。

中間層105及びゲ[illegible]107は、ドエロ／及びアモルファスシリコンゲルマ(半導体電子材)が好適された非晶質シリコンを材料として形成される。

上記の様に形成された非晶質シリコンの形成には、水素又は／及び非晶とシリコンとの化合物を使用し低温グロー放電分解法に従って行われる。

本発明に於いて、使用される水素又は／及び非晶とシリコンとの化合物としては、メタン(CH₄)、エチレン(C₂H₄)、アセチレン(C₂H₂)、ジボラン(B₂H₆)、ホスフィン(PH₃)、四フッ化シリコン(SiF₄)、四塩化シリコン(SiCl₄)、ジクロルシラン(SiH₂Cl₂)、トリクロルシラン(SiHCl₃)、モノシラン(SiH₄)、ジシラン(Si₂H₆)、トリシラン(Si₃H₈)、ヘキサクロルジシラン(Si₂Cl₆)、ヘキサフルオロジシラン(Si₂F₆)、ヘキサクロルジシロキサン(Si₂OCl₆)、ヘキサフルオロジシロキサン(Si₂OF₆)、ヘキサクロルジシラザン(Si₂NHCl₆)、ヘキサフルオロジシラザン(Si₂NHF₆)、ヘキサクロルジシルメタン(Si₂CH₂Cl₆)、ヘキサフルオロジシルメタン(Si₂CH₂F₆)、ヘキサクロルジシルエタン(Si₂C₂H₄Cl₆)、ヘキサフルオロジシルエタン(Si₂C₂H₄F₆)等が好適なものとして使用される。

これ等の化合物は、中間層105及びゲ[illegible]を形成する際にガスを供給ガスとして希釈の為供給するガス状態で成膜にし得る成膜室内に所定の圧力の下に導入される。

ゲ[illegible]を形成するには、上記の化合物の他にドーパントの導入用の化合物として、ボと水素との化合物又は燐と水素との化合物を成膜室内に共存させてグロー放電を生じてゲ[illegible]を形成する。この際形成されるには、ドーパント導入用化合物の成膜室内への導入は真空槽の中に於いてドーパントとしての燐又は／及び硼素が導入され、ゲ[illegible]特有の金属が形成される。

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本発明において、本発明に使用される第1族元素と水素との化合物としては、具体的には例えば PH_3 が、炭素と水素との化合物としては Si_2H_6 を挙げることが出来る。この他、容易にガス化し得る化合物であれば、炭素数の大きいものも使用し得るものである。

本発明において、その目的を効果的に達成するためには、α° 及び β° を形成する際に、膜に形成されてあるのは第 IB 族の元素を例えば電離室内のエッチングをして次工程で行なうことはせず、成膜後の状態の膜面に α° 及び β° を形成する必要がある。

更には α° 及び β° の形成に際し、母体ガスとしてのシリコンと水素又は／及び水素との化合物とドーパント導入用のガスとしてのドーパントガスであるシリコンと第 IB 族の化合物又は／及びシリコンと水素との化合物の成膜室内への導入の割合を正確に制御する必要がある。本発明におけるその割合は、シリコンと水素の化合物を母体ガスとして使用する場合には、母体ガスに対してドーパントガスを通常は 5×10^{-5} ～ 5×10^{-2} vol%、好適には 10^{-4} ～ 10^{-2} vol%とされるのが望ましいものである。シリコンと水素との化合物を母体ガスとして使用する場合には、母体ガスに対してドーパントガスは通常 $10^{-5} \sim 5 \times 10^{-2}$ vol%、好ましくは $5 \times 10^{-5} \sim 10^{-2}$ vol%の割合で混合されるのが望ましいものである。

この様な混合割合に於いて、混合後のガスをグロー放電を生起させる堆積室内に導入して共存させることで形成された堆積膜中でグロー放電を生起させ、該グロー放電を利用して前記の半導体層 105 の表面な状態上に第1の α° 及び β°-1と第2の α° 及び β°-2とを積層させて本発明の目的を達成することにより、良好なトランジスタ特性を示す非晶質シリコン TFT を得ることが出来る。

半導体層 105 を形成する際の母体ガスとしての水素又は／及び水素とシリコンの化合物はそれ等だけで堆積室内に存在させてもよいが、好ましくは He ガス又は／及び Ar ガスによって稀釈されて堆積室内に存在させられる。この際の稀釈ガスとしての割合は、水素とシリコンの化合物からなる母体ガスに対して、通常は 99.9 : 1～1 : 9、

好適には 99 : 1～7 : 3とされるのが望ましいものである。また水素とシリコンの化合物からなる母体ガスに対して、通常は 2 : 1～50 : 1、好適には 5 : 1～20 : 1とされるのが望ましいものである。

本発明においては、稀釈ガスとしては、前述 He ガスが望ましいものとしてあげることが出来る。尚、水素とシリコンとの化合物を使用する場合には、Ar ガスを稀釈ガスとして使用する方が良い結果を得ることが出来る。

上記の条件成合体の他、形成される半導体層 105 の特性に良好な影響を与える為には、好ましい基板温度、稀釈成分の圧力、及びグロー放電電力をあげることが出来る。

これ等の因子は、本発明においては、その目的を効果的に達成するために、各々の最適範囲に制御されて、形成が成される。

水素化非晶質シリコン（a-Si:H）の場合には基板温度として通常は 100℃～300℃、全圧力としては通常 0.10～1.0 Torr、放電電力としては通常 0.005～0.1 W/cm² とされるのが望ましい。

弗素化非晶質シリコン（a-Si:F）、及び水素弗素化非晶質シリコン（a-Si:F,H）では基板温度は通常 200℃～500℃、全圧力は通常 0.10～1.0Torr、放電電力は通常 0.1～1 W/cm² とされるのが望ましい。

本発明においては、形成される α° 及び β°-107の比抵抗値はより効果的には $10^{9}\ \Omega$-cm以下にされるのが望ましいものである。この様に α° 及び β°-107の比抵抗値を $10^{9}\ \Omega$-cm以下とするには、前記の稀釈成分体の他に基板温度、全ガス圧力、グロー放電電力の各条件を相互に設定して行なう必要がある。その様な条件は、シリコンと水素の化合物を母体ガスに使用する場合には基板温度としては、通常 100℃～300℃、全圧力としては通常 0.10～1.0 Torr、放電電力としては通常 0.01～0.1 W/cm² の範囲を得ましいものとしてあげることが出来る。

母体ガスとして、シリコンと水素との化合物を使用する場合には、基板温度としては、通常 200℃～

500℃．全ガス圧力としては通常0.1Torr～1.0Torr，好ましくは0.1～1 Torrの範囲内で供給する必要がある。

α°Siを形成する際に，原料ガスとしてのシリコンと水素との化合物又は／及びシリコンとハロゲンとの化合物と，ドーパントガスとしてのシリコンと燐との化合物又は／及びシリコンと燐との化合物の他に望ましくは稀釈ガスとしてH2，He，Ne等のガスを用いて所定の割合に稀釈するのが好ましいものである。殊にH2ガスの使用は良好な膜質を得ることが出来，好ましいものである。

この際，稀釈ガスの混合割合は，水素とシリコンの化合物からなる原料ガスに対しては稀釈ガスとの混合ガスの割合との比で，通常は99.9：1～1：9，好ましくは99：1～7：3とされるのが望ましいものである。

また水素とシリコンの化合物からなる原料ガスに対しては，稀釈ガス単独の混合ガスの割合との比で2：1～50：1，好ましくは5：1～20：1とされるのが望ましいものである。

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成する場合，各電極，α°Si，中間層，及び絶縁の作成条件は前記したスタガード型の構造のTFTの場合と実質的には同じであって，ただ，それ等の作成順が異なるだけである。

コプレーナー型TFTを作成する場合には，先ず，所定通りの洗浄基板を用意した基板を用意し，該基板を所定内の反応室に設置して，グロー放電によって中間層を形成する。中間層の形成後，引続き該反応内の真空を破ることなく，グロー放電を続行しながら原料ガスを変えてα°Siを前記中間層上に形成する。α°Siの形成後，該α°Siを所定のパターニング及びエッチングの処理によって一部分を除去しが2つの離隔された部分に分離し，第1のα°Si及び第2のα°Siを中間層の表面上に互いに対向して形成する。

その後，グロー放電法，スパッタリング法若しくは真空蒸着法によって前記α°Siの除去された部分に絶縁層を設ける。

次いで，第1のα°Si上にはソース電極を，第2のα°Si上にはドレイン電極を，絶縁層上にはゲート電極を形成する。

上記において，絶縁層と各電極の形成順は逆にしてもよいもので，組合せに応じて種々の組み合せで，それ等は形成されてもよいものである。

実施例1

第1図に示す形態で，以下のA～Dの4種類の試料を作成して，各々のトランジスタ特性を測定した。

(試料A)

第1図の構造において，α°Si 107のないもの

(試料B)

第1図の構造において，中間層105を形成した後，該層105の表面を大気に触し，その後，その表面上に直接α°Si 107を形成したもの

(試料C)

第1図の構造において，中間層105を形成した後，該層105の表面を大気に触さないが，グロー放電チャンバーを変え，その後，前記層上に直接α°Si 107を形成したもの

(試料D)

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第1図の装置において、グロー放電を生ずることなく(例えば一定の放電電圧を維持した状態で)ゲート弁105と10'弁107とを連続的に制御したもの

(その他の実施の仕方及び作用効果)

基板104は厚さ1.2mm、大きさ70×70mmのコーニング社製#7059ガラスを用いた。該ガラス基板は中性洗剤を用い超音波洗浄を5分行ない、次いで蒸留水、イソプロピルアルコール蒸気により充分洗浄したのち乾燥し、次に真空槽内に設けてある加熱ヒーターにより充分乾燥し、ひきつづきイソプロピルアルコールで超音波洗浄を3分行ない蒸留水煮沸洗浄で洗浄させて基板を表面処理した。このように表面処理したガラス基板104上にアルミニウムを圧力1.5×10⁻⁵ Torrの下で真空蒸着しガラス基板104上に一旦に1500Å付着させたのち、厚さ200Å、幅2mmのゲート電極を形成させるための電極のパターニング、エッチングをAZ1350H(Shipley社製)のフォトレジストを用い通常の方法で行なった。

パターニングされたアルミニウムゲート電極上に第2図に示される組成を用いて下の様にして絶縁層104としての窒化シリコン膜を形成した。

真空槽にゲート電極101の形成されたガラス基板104を置き0.5mm、大きさ2.0cmの厚さのSUS 304製の基板ホルダに固定して、電極面201内に配置されてある、加熱線及び上下自由に可動する大きさ20mmφのSUS 304製のアノード電極202の所定位置に基板を固定した。

又、厚さ3mm、大きさ17mmφのSUS 304製のカソード電極203上には、厚さ3mm、大きさ17mmφの前記ガラス基板と同様に窒化処理を施した石英板205を設置した。

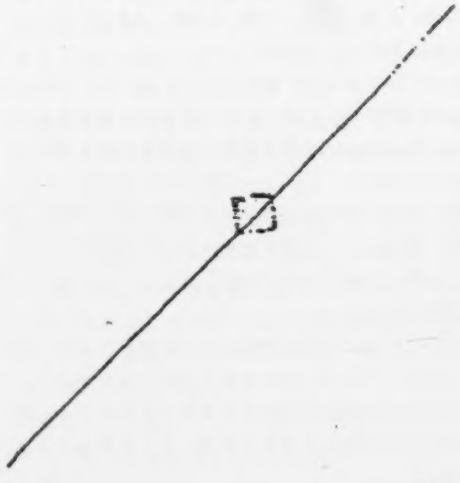
次に、モーター204をON状態にして、ガラス基板を均一に加熱して250～260℃に保持した。電極面201内をB-Aゲージ(ANELVA製)の指示が圧力1.0×10⁻⁶ Paになるまで排気した。

この時、ニードルバルブ209-1～209-6は全て閉

じた状態を維持した。又、ガス供給制御装置(MFC)210-1～110-6としてはサーマルマスフローコントローラ(Tylan Corporation製FC-260)を使用した。

次に、N_2ガスライン211-1のMFC210-1の目盛を100SCCMに設定し、次いではSiH_4ガス(SiH₄濃度10vol%)ライン211-2のMFC210-2の目盛を50SCCMに設定した。その後、ニードルバルブ209-1,209-2を開き、以上2種類の混合ガスを流出させ、管内圧2.5mmで、0.1mmφのガス出口を11個設けた幅21mmφの直状ガス導入管206より前記のガスを供給させ、電極面201内の圧力が低圧真空計(MKSバラトロン型22MA5S)で1Paになるように排気系を調整した。次いで、アノード電極202とカソード電極203間を50mmに保ち、前記のガス導入管206をアース電位に設置するとともにガス導入管206のガス供給口とカソード電極203間を40mmに保ち、アノード電極202とカソード電極203間に高周波電界を印加し電極面201内にプラズマを発生させた。

この時、投入される高周波電圧を0.4kV、高周波電力を5Wにした。この様な条件でプラズマを1時間維持させてゲート電極101を覆うように基板104上に窒化シリコンを堆積させて0.12μ厚の絶縁層104を形成した。



上に供給基板層106上に基層106作成後と同一
[illegible]
反応ガスを用いその後にして膜厚0.2μmのa-Si:H)
を堆積させた中間層層105を形成した。基板層106
形成後ストップバルブ209-1を閉じ次にベースシ
ランガスライン211-2のストップバルブ209-2を開
いた状態でかつMFC210-1の流量を60SCCM
に設定した状態にしてノード電極202とカソード
電極203間に高周波電界を印加し堆積室201内に
プラズマを発生させa-Si:Hを堆積させた。このと
きの投入される高周波電圧は0.4KV.高周波電
力は5Wであった。プラズマは2時間維持させて
0.4μ厚の中間層層105を形成した。
このときの中間層層105の光伝反は2.0×10⁻⁸Ω⁻¹cm⁻¹
であった。
(本試料製作の条件及び作成手順)
(A):上記の様にして中間層層105の形成された基
板104を充分冷却後堆積室201の外に出し、
ソース電極102、ドレイン電極103を中間層層105
表面上に形成するために、ゲート電極101の形成と
同様のパターン105の上にAlを蒸着した。

次いで、ソース電極102とドレイン電極103との
間の距離し(チャネル部分)が50μ、ソース
電極102及びドレイン電極の長さZが10mmに
なる様にパターニングとエッチング処理を施して試
料Aを作成した。
(B):試料Aと同様に、中間層層105までを形成し
た後、一旦真空を破って、基板104を堆積室201
内に設置した後、再び堆積室201の真空度まで排
気した。その後、δ°層107を次の様にして形成し、
次いで試料Aと同様の条件と手順でソース電極102
及びドレイン電極103をδ°層107表面上に形成し
試料Bを作成した。
水素ベースシランガス(SiH₄濃度1mol%)ライン
211-2のMFC210-2の流量を40SCCMに、水素
ベースフォスフィンガス(PH₃濃度100ppm)ラ
イン211-4のMFC210-4の流量を20SCCMに
設定した状態でノード電極202とカソード電極
203間に高周波電界を印加し堆積室201内にプラ
ズマを発生させδ°層107を形成した。
このときの投入される高周波電圧は0.4kV、高周

波電力は5Wでありプラズマは1時間維持させて
0.1μ厚のδ°層107が形成された。
次に試料Aと同様にして、ソース電極102、ドレ
イン電極103とを電極間隔しが50μ、電極の
長さZが10mmになる様にパターニング及びエッ
チング処理を施した。この時Alのエッチング液は
H_3PO_4 : CH_3COOH : HNO_3 : H_2O = 25 : 5 : 1 : 4
からなる混合液で行った。
ドナンネル部分のδ°層のエッチング液はHF : HNO_3
: CH_3COOH = 1 : 20 : 50 からなる混合液にて行
い、20secの処理時間することによりδ°層を完全に
除去した。
(C):試料Aと同様に中間層層105までを形成した
後、一旦グロー放電を終了後の基板温度雰囲気を0に
し(グロー放電を一旦停止し)ストップバルブ
209-2を閉じた。
次に、MFC210-3及び210-4の流量を各々40
SCCM、20SCCMに設定した後、徐々にストッ
プバルブ209-3,209-4を全開して混合ガスを堆
積室201内に放出させ堆積室201内に導入

される高周波電圧を、0.4KV.高周波電力を5W
としてグロー放電を再開させδ°層107を形成した。
この際、プラズマは1時間維持させて0.1μ厚の
δ°層を得た。次に実施例と同様にしてAlを真空蒸
着しパターニング、エッチング処理を施した。Al
のエッチング液は試料A、Bと同一であり、ドナ
ンネル部分のδ°層のエッチング液はHF:HNO_3:
CH_3COOH = 1 : 20 : 50 からなる液で除去した。
ソース・ドレイン間形成し、ソース、ドレイン電
極及びZは試料A、Bと同一である。この様にして
作成した試料を試料Cとした。
(D):試料Cとくらべ、中間層層105形成後基板温
度Tを0とせず、グロー放電が安定した状態で速や
かに、ストップバルブ209-2を開じ、次に予め
MFC210-3,210-4の流量をそれぞれ40SCCM,
20SCCMに設定しておいてストップバルブ209-
3,209-4を開いた。このとき堆積室201内の圧力
は15Paから若干低下したが放電は維持され、約
1分後15Paになった。このときの高周波電力は
中間層層105の形成の場合と同じ5Wであった。

(19)日本国特許庁(JP)

この様な合計でダミー並びを1回繰返すと0.1μmの[illegible]膜107を形成し、その後前記と同様なパターニング、エッチング処理を施し同一形状のソース電極102、ドレイン電極105を形成した。これを試料Uとした。

なお上記合計で形成した[illegible]膜107の比抵抗値は試料B、C、Dともに0.4Ω-cmであった。

第3図にして形成した試料A、B、C、Dに対しゲート、ソース、ドレインのそれぞれに対しリード線とうしのためAlのワイヤーボンディングを施し、第3図に示すごとくソース電極102はエレクトロメーター K(Keithley 社616型)に接続し、ドレイン電極105はソース、ドレイン間に電界を印加するための電圧Vdと、ゲート電極101はゲート電圧に電界を印加するための電圧Vgに接続しVgをパラメーターとし、Vdを変化させてソース・ドレイン間に流れる電流Idをエレクトロメーターにて読みとった。

第4図にVd = 1.5Vのときの試料A、B、C、DのVgに対するIdの変化の様子を示す。

Vg = 1.0 Volt 以下の低電圧領域で特うかなようにゲートリク電流が支配されている為Vgに対しIdが急激に変化しているのは試料Dにおいてみられた。またゲートリク電流はB、C、Dの順に小さくなることもこの図から読み取れる。

ゲート電圧を変えてもVg-Id特性における低い電圧では第4図と同様の傾向を示した。

実施例2

半絶縁性GaAs基板105及びゲート電極107を下記に示す条件で形成し、その後前記実施例1および比較例などは全て実施例1と同一条件で形成して4種類のアクティブ層(試料A-2、B-2、C-2、D-2)を形成しゲートリク電流について検討した。

半絶縁性GaAs基板105はSiドープのGaAsをMBE法(分子線エピタキシー法)で成長させたものを使用した。

GaAs基板105及びゲート電極107を下記に示す条件で形成し、その後前記実施例1および比較例などは全て実施例1と同一条件で形成して4種類のアクティブ層(試料A-2、B-2、C-2、D-2)を形成しゲートリク電流について検討した。

半絶縁性GaAs基板105はSiドープのGaAsをMBE法(分子線エピタキシー法)で成長させたものを使用した。半絶縁性GaAs基板105はSiドープのGaAsをMBE法(分子線エピタキシー法)で成長させたものを使用した。

Vo=1.5 volt)を図5図に示す。なちに明らかなようにσ-イッタ領域は試料0-2で最も広くとれているが他の試料A-2, B-2, C-2 は点状でないことがわかる。

絶縁膜106として窒化シリコンの代わりにSiO_2のスパッタリング膜(膜厚0.1 μ)を用いても同様の結果が得られ、ソース、ドレイン電極とゆるい膜105のガーイッタ領域は中間絶縁膜105とσ膜107の役割を兼用した状態で形成して作成することにより高感度を有するが判明した。

一方絶縁膜ではσ膜形成のためのドーピング材料としてPH_3の例を挙げたがAsH_3を混合したガスを用いてσ層を形成しても良い結果が得られた。

尚、中間絶縁膜のための原料ガスとして上記の実施例ではSiH_4, SiF_4の例を挙げたが他Si_2H_6, SiF_4の混合ガスを用いてもよいことは当然である。

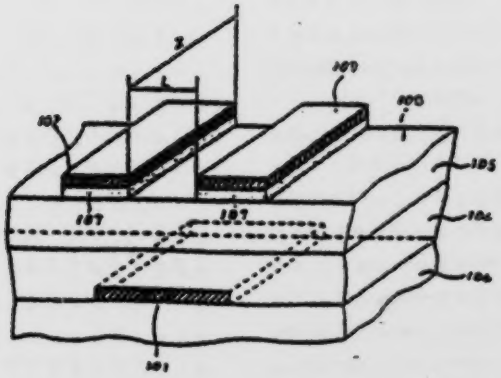
4.図面の簡単な説明

第1図は本発明の好適な実施態様の1つであるトランジスタの構造を説明するための模式的な斜視図である。第2図(a)～(d)は本発明のトランジスタの製造を説明するための模式的断面図。第3図は本発明のトランジスタの特性を測定するための回路図。第4図及び第5図は各々本発明の実施例における効果を示すVo－Io曲線の説明図である。

101 …… ゲート電極　102 …… ソース電極
103 …… ドレイン電極　104 …… 基板
105 …… ゆるい絶縁膜　106 …… 絶縁膜
107 …… σ膜　108 …… クリーンサーフェス

出願人　キヤノン株式会社
代理人　(8807)弁理士　丸島儀一

第1図



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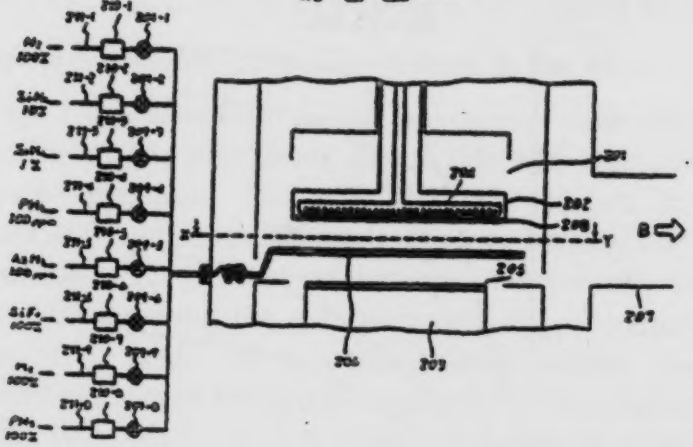
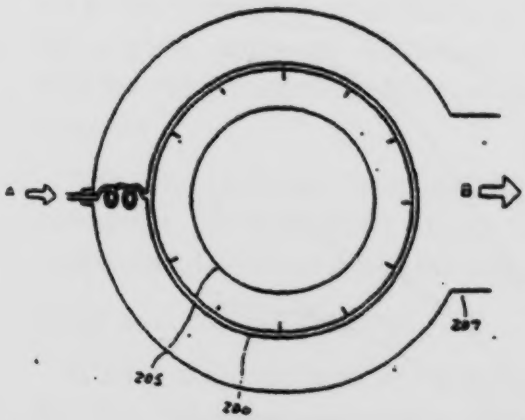
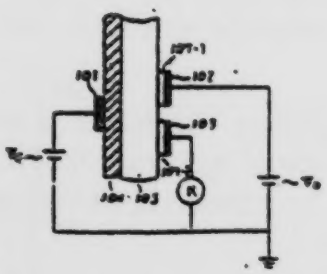
第2図(a)



第2図(b)

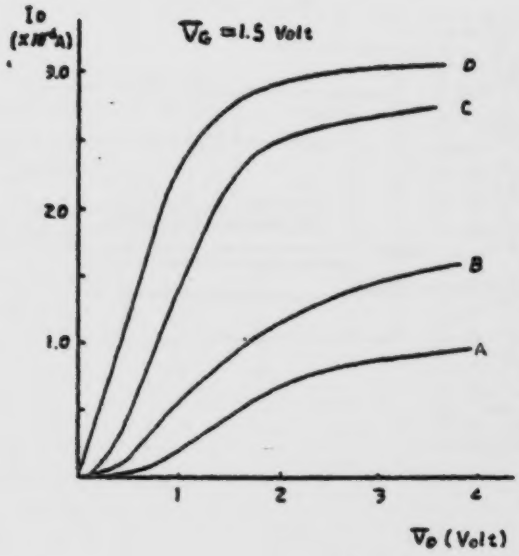


第3図

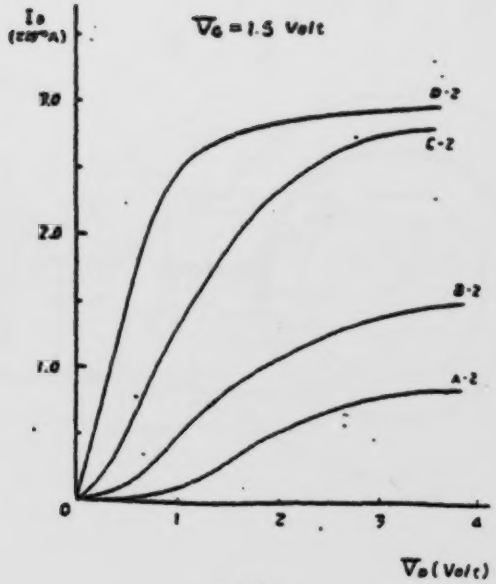


56-135968(11)

第4図



第5図



APPENDIX T

(PRE-EXISTING PARTIAL TRANSLATION OF CANON '968)

PARTIAL TRANSLATION OF JP LAID-OPEN 56-135968

(page 309, column 7, line 17—column 8, line 8)

Fig. 1 is a schematic partial perspective view showing the structure of the amorphous silicon thin film transistor of the present invention. The a-Si-TFT 100 shown in Fig. 1 comprises a substrate 106 made of glass, ceramics or the like, a gate electrode 101 formed thereon, an electrically insulating layer 105 covering the gate electrode 101, a semiconductor layer 105 made of a hydrogenated and/or fluorinated amorphous silicon laminated sequentially, first and second n^+ layers 107-1 and 107-2 arranged in a parallel relation with and separated from each other on the surface 108 of the semiconductor layer 105, a source electrode 102 formed on the first n^+ layer 107-1, and a drain electrode 103 formed on the second n^+ layer 107-2.

(page 309, column 9, lines 6-12)

The electrical insulating layer 104 is constituted with a SiO_2 film formed by sputtering, or silicon nitride film formed by a glow discharge deposition method, or the like, and besides these materials, Al_2O_3 or the like is also an effective material.

The semiconductor layer 105 and the n^+ layers 107 mainly comprises an amorphous silicon in which dangling bonds (unsaturated electron pairs) are compensated by H or/and F.

(page 312, column 20, lines 3-5)

A silicon nitride layer is formed as the insulating layer 104 on the patterned aluminum gate electrode by using an apparatus shown in Fig. 2 in the following manner.

(page 315, column 31, lines 5-10)

The same tendency was confirmed even if a sputtering film (0.1 μm film thickness) of SiO_2 was used in place of silicon nitride, and it was confirmed that the ohmic contact between the source, drain electrodes and the semiconductor layer 105 can be realized by sequentially depositing the semiconductor layer 105 and the n^+ layers 107 with the condition in which the discharge is maintained.

APPENDIX U

(Claim, 1, '636 Patent)

1. An insulated-gate field effect transitor comprising:

a. non-single crystalline semiconductor layer doped with hydrogen or halogen and having an intrinsic conductivity type, said semiconductor layer being disposed over a substrate;

a channel region formed in said semicoductor layer, wherein a concentration of at least one of oxygen, carbon and nitrogen contained in said semiconductor layer is not higher than $5x10^{18}$ atoms/cm^3;

source and drain regions forming respective junctions with said channel region whereby charge carriers move through said channel region between said source and drain regions in a path substantially parallel to said substrate;

a gate insulator comprising silicon nitride and directly contacting said channel region; and

a gate electrode contacting said gate insulator;

wherein said channel region is interposed between the gate insulator and another insulator.

APPENDIX W

(Testimony of Shumpei Yamazaki re Canon '968)

UNITED STATES DISTRICT COURT
E. D. VIRGINIA

C.A. NO. 96 1460-A

SEMICONDUCTOR ENERGY LABORATORY CO. LTD.,
Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
AND SAMSUNG SEMICONDUCTOR, INC.,
Defendants.

Testimony of Shumpei Yamazaki, March 17, 1998 re Canon '968

[208] BY ATTORNEY BERG [Attorney for Samsung]:

Q. During the prosecution of the '636 Patent, or the chain that resulted in the '636 Patent, you provided the United States Patent Office with some documents related to the Laid-Open Japanese Application '968, the Canon reference, did you not?

A. Yes, I believe I did, but I would like to confirm this by seeing the patent.

ATTORNEY BERG: Let's show the witness SEL Trial Exhibit 429. That will be Trial Exhibit 1002.
ATTORNEY GOODWIN: The '636 Patent.
ATTORNEY BERG: The '636.

(Plaintiff's Exhibit No. 1002 premarked for identification.)

THE WITNESS: Was there a '968, or such [209] thing as that?

ATTORNEY BERG: I will get back to the '968 now.

ATTORNEY BERG: May we have a copy of SEL 429 for the witness, please?

(Plaintiff's Exhibit No. 429 premarked for identification.)

THE WITNESS: All right.

BY ATTORNEY BERG:

Q. Dr. Yamazaki, this is a copy of what you provided to the Patent Office with respect to Laid-Open Application '968, is it not, sir?

A. Yes, that's correct.

Q. There is a one page partial translation of the Japanese Laid-Open '968, and there is also the entire untranslated document, is there not?

A. Yes, that's correct. It's attached.

ATTORNEY GOODWIN: Excuse me, your Honor. I believe what is marked as SEL 429 includes the entire translation, not just the partial translation.

THE COURT: Can we have a stipulation so that we can get on with it, that the Canon reference, that is Laid-Open Application '968, was made available to the Patent Office in connection with the '636 application, and the English translation was a portion of it, not the whole [210] thing—and the portion of it is reflected, that was translated into English is reflected in what exhibit, Mr. Berg?

ATTORNEY BERG: It's reflected as an attachment to 429. Perhaps we should call that 429A.

THE COURT: All right, in 429A.

(Plaintiff's Exhibit No. 429A premarked for identification.)

THE COURT: Is that stipulated?

ATTORNEY GOODWIN: That's fine.

THE COURT: Let me repeat that stipulation for translation for Dr. Yamazaki.

It is stipulated by and between the parties that in connection with the '636 application, Dr, Yamazaki made available to the U.S. Patent and Trademark Office Laid-Open Applicaton '968 from Japan in Japanese, but with an Engish translation of a portion of the Laid-Open '968 Patent, and that portion is reflected in Defendant's Exhibit 4—what is it, Mr. Berg?

ATTORNEY BERG: 429A.

THE COURT: —429A. And let's show that now to Dr. Yamazaki.

Now, given that stipulation, questions will proceed on that basis.

THE WITNESS: That is correct.

[211] THE COURT: Next question.

BY ATTORNEY BERG:

Q. Dr. Yamazaki, would you acknowledge for me that 429A does not disclose, in this partial translation, a channel region sandwiched between an insulated gate and another layer of insulation?

A. That's correct, that is not disclosed.

Q. Which was one of the elements of your Claim Number 1 in the '636, was it not?

A. That is correct.

Q. You never provided to the Patent Office a concise statement related to the relevance of the Laid-Open Japanese '968, did you sir?

A. I think there is a misunderstanding here. I believe that have to do with Dr. Myerson's earlier testimony having to do with sandwich structure.

Is that the extent of your question, having to do with the sandwich structure?

Q. Yes. I believe your testimony was—no, no, strike that.

What I am asking you is if you provided a concise statement of the relevance, not just about the sandwich structure but of the relevance of the '968 to the Patent Office.

A. I really can't reply without looking at the [212] remarks of the '968. However, however, the part that is translated is what I thought to be the most important portion of the '968 patent.

Q. The most important portion?

A. Yes, the part of '968 that I thought most important. Here it is disclosed that the gate insulator is made of silicon nitrate. I thought this was the most important portion, and this translation was submitted to the United States Patent Office.

THE COURT: Let me ask Dr. Yamazaki, why did you translate any of it?

THE WITNESS: At this time, I was involved in a pending patent. As far as the '968 was concerned, it was a pending patent. That was different from this '636 Patent, in that as well, silicon nitride was an important element of the structure, and what had been translated for that patent was provided, as is for this other patent.

THE COURT: My question to you, Dr. Yamazaki, is: Why did you—why didn't you just give the Patent and Trademark Office the Japanese patent, without any translations?

Why did you choose to translate any of it?

THE WITNESS: Elsewhere I had provided what I thought were the more important or most important references, and I thought that was sufficient.

[213] THE COURT: Did you have any information from anyone that the Patent and Trademark Office required translations of foreign language prior art references?

THE WITNESS: I don't recall whether there is a rule of any kind. I voluntarily did the translation, what I thought the most

important portion, so as to assist the examiner in his examination.

THE COURT: You personally made the decision that just a portion of it should be translated: is that right?

THE WITNESS: That's correct.

THE COURT: Go ahead, Mr. Berg.

BY ATTORNEY BERG:

Q. Dr. Yamazaki, you told the Court, in fact, that the untranslated portion of the Canon reference that was merely cumulative, and you told the Court to, quote, that the Nakagawa reference in fact was cumulative of the Canon reference, did you not, sir?

THE INTERPRETER: I don't know how to say "cumulative" in Japanese. Is that a term of art.

ATTORNEY BERG: I don't either.

THE COURT: He is asking you to give him a synonym in English.

THE INTERPRETER: I can ask—

ATTORNEY BERG: I can do better—

[214] THE INTERPRETER: I can ask him—

ATTORNEY BERG: The Canon essentially repeated the essential elements of Nakagawa.

THE INTERPRETER: I'm sorry to trouble you.

ATTORNEY BERG: Okay.

BY ATTORNEY BERG:

Q. Didn't you tell this Court that the untranslated portion of the '968 was merely a repetition of what you would find in the Nakagawa reference?

A. I don't quite understand what you mean, but I did think that the Nakagawa reference '477 was extremely important in connection with the '636.

ATTORNEY BERG: Let's look at Defendant's Exhibit 1427.

(Defendant's Exhibit No. 1427 premarked for identification.)

THE WITNESS: (Complied)

BY ATTORNEY BERG:

Q. While getting that, do you remember making a declaration, Dr. Yamazaki, over your signature on December 1st, 1997, for this Court?

A. Yes.

Q. Now, let's read it into the record, so his Honor—so there will be no mistake what I am talking about, Dr. Yamazaki. At Paragraph 30 of Exhibit 1427—

[215] THE COURT: You have a copy for Mr. Goodwin?
ATTORNEY GOODWIN: Thank you.
THE INTERPRETER: What paragraph?

BY ATTORNEY BERG:

Q. Paragraphs 30 and 31—

ATTORNEY BERG: after that, we are going to go to Exhibit 426, so if you can have that ready.

BY ATTORNEY BERG:

Q. (Reading:)

"During the prosecution of the '636 Patent, Japanese Laid-Open application '968, assigned to Canon, the Canon reference, was submitted by SEL to the Patent Office along with a partial translation that had previously been prepared in connection with another case.

The Canon reference, a full English translation, and the partial translation, are attached as Exhibit R. Samsung

claims that the untranslated portion of the Canon reference further shows a co-planar thin film transistor with a semiconductor layer sandwiched between a gate insulator and another insulator.

31. This is not material, since SEL also provided the examiner with another reference which shows a thin film transistor [216] structure that is the same as the film transistor structure described in the untranslated portion of the Canon reference. This reference to Nakagawa '477 Patent "discloses, including by a drawing on the cover of the patent, a co-planar thin film transistor with a semiconductor layer sandwiched between a gate insulator and another insulator. A copy of the '477 is attached as Exhibit S."

In fact, you, yourself, made a point of pointing out to the U.S. Patent Office that Nakagawa taught a channel region—excuse me—the channel region of Nakagawa was N-type while your channel region was intrinsic, did it not, sir.

A. Is that included in the '636 remarks?

Q. Let me ask you again, Dr. Yamazaki

Did you tell the U.S. Patent Office that the big difference between—strike that.

Did you tell the you States Patent Office that while you had an intrinsic—a channel region in the intrinsic layer, Nakagawa was different because it had a channel region in the N-type layer?

ATTORNEY GOODWIN: Your Honor, it is not clear to me whether counsel is asking the witness to answer based on memory, or he is directing the witness to [217] a particular document.

THE COURT: Overruled. What's not clear to you doesn't matter. It depends on the witness. He may answer if he can.

THE WITNESS: I just don't recall. What I would prefer to do is look at the details, the particulars in order to confirm it.

ATTORNEY BERG: I will do that in just a moment then.

BY ATTORNEY BERG:

Q. Let me ask you this: Is it a fair statement that in Claim 1 of your '636, that you claimed an intrinsic layer, rather than an N layer?

A. That's correct.

* * * *

[223] ATTORNEY BERG: Let me show you something.

BY ATTORNEY BERG:

Q. Have you seen this drawing before, Dr. Yamazaki?

A. I have not.

Q. I am going to represent to you that this is the drawing that Professor Luckovsky, your expert, made of the fabricaton process in the untranslated portion of the Canon reference.

A. All right.

Q. I would like you to look at the very first layer where it says "insulator." Do you see that, sir?

A. Yes.

Q. And then look at the top, where it says, [224] "Insulator layer can be either SI02, silicon nitride"—let us stop there.

Do you see the Canon reference that you didn't have translated provides a drawing of a thin film transistor with a silicon nitride insulator?

A. I see what's written here.

Q. And in addition, that was part of Claim 1 of your '636 Patent, was it not, sir, a gate insulator comprising silicon nitride?

A. That is correct.

Q. In addition, this Canon untranslated portion, untranslated drawing or unprovided drawing from the untranslated portion of the '968, also contains an intrinsic layer. Do you see that, sir?

THE INTERPRETER: I'm sorry, shows a what?

Q. An intrinsic layer.

A. That's correct.

Q. It also shows, does it not, the sandwich configuration that you said was so important to your patent?

A. Now, you are asking about the Luckovsky drawing?

Q. Yes, I am, which I will represent to you comes from the description in the untranslated part of the Canon reference.

[225] A. He may be saying that, but my point of view is somewhat different.

Q. So, you know what the drawings should look like from the untranslated portion?

A. What we are talking about now, I believe, is a reference in the '968 Patent, an indication in the '968 Patent, that is Exhibit 429, page 17, lines, counting from the bottom, lines 5 through 7.

There is an English translation attached. At this point, I can't exactly tell you where the English appears, of that portion appears in English.

Q. Now, you are disagreeing with Professor Luckosky's drawing, your own expert's drawing, isn't it?

A. I think it would be better if I read this text here.

> Afterwards, by means of the glow discharge method, the sputtering method, and by means of the vacuum evaporation method, the above-mentioned N-plus—the portion mentioned above in which the N-plus layer has been removed is obtained.

In other words, when we are talking about the insulation layer, just judging from the text here, it is hard to tell how and where it is to be provided. Therefore, by one interpretation, what Luckovsky has [226] written is correct. However, just on this text alone, I am not sure whether or not you could not arrive at some other understanding.

Q. But Dr. Yamazaki, forgive me, Dr. Yamazaki, let's assume there is some difference of opinion. Isn't that a discussion that you should have been having with the Patent Office, if you thought there was some area of disagreement?

Shouldn't you have had the entire thing—

THE COURT: The question is now compound. One question.

ATTORNEY BERG: Yes.

BY ATTORNEY BERG:

Q. In fact, under your duty of candor—strike that.

Your indecision about what that means has just occurred to you right now, has it not?

A. Whether at this moment, in any case, in connection with this lawsuit having this text point it out to me by the Samsung side, and having looked over it, I now feel that this Luckovsky diagram may be correct. However, there may be others that are also correct. My understanding of this current structure as indicated here would be vague—

Q. Wait, wait—let me stop you, Dr. Yamazaki. Did you say "would be vague"?

[227] ATTORNEY BERG: Mr. Taylor, did you say "would be vague"?

THE INTERPRETER: Yes.

THE WITNESS: If all you have is this text here, then it is vague.

BY ATTORNEY BERG:

Q. Back at the time that the '636 Patent was pending, did you indicate that to the Patent Office, that within the untranslated portion that there was a structure, untranslated, in an untranslated portion, there was revealed a structure that was very similar to the structure of your patent?

Let me just ask that question.

A. Yes, in the Nakagawa, the '477 Patent, there is a diagram indicating that.

THE INTERPRETER: I asked him to repeat the portion.

THE COURT: He may repeat it.

A. There is a drawing showing that in the channel area, there is a gate insulator directly affixed, attached, touching it.

Within the elements of Claim 1 is the notion of directly contacting. There are words saying "a gate insulator comprising silicon nitride and directly contacting said channel region."

[228] THE COURT: What are you reading from?

BY ATTORNEY BERG:

Q. What are you reading from?

A. I read a portion of a claim of '968.

Q. Let me ask you this, Dr. Yamazaki: If Professor Luckovsky is correct, that what he has described is the sandwich style structure with a semiconductor layer sandwiched between an insulating gate layer and another insulator, as is described here, with the silicon nitride gate insulator, with an intrinsic layer, if Dr. Luckovsky is correct, then he has described in this drawing virtually all the elements of your claim in Claim Number 1; that's fair, isn't it?

THE INTERPRETER: I am going to have to break up that question. I can ask it—I can ask the latter part in a single question, and then fill in the specific items, if you don't mind.

THE COURT: No, let's have the court reporter read the question back slowly, and then you can see—you wouldn't be able to in a single question, but I can understand why you might have to have it repeated.

All right, let's have the court reporter repeat the question.

(The reporter read the record as follows:)

"Question: Let me ask you this, Dr. [229] Yamazaki: If Professor Luckovsky is correct, that what he has described is the sandwich style structure with a semiconductor layer sandwiched between an insulating gate layer and another insulator, as is described here, with the "silicon nitride gate insulator, with an intrinsic layer, if Dr. Luckovsky is correct, then he has described in this drawing virtually all the elements of your claim in Claim Number 1; that'a fair, isn't it?"

THE COURT: Now, one more time, Mr. Berg.

BY ATTORNEY BERG:

Q. Dr. Yamazaki, if Dr. Luckovsky's drawing is accurate, in that it describes a sandwich structure, that is, an intrinsic layer—excuse me—that is, an intrinsic layer sandwiched between two insulated regions, it shows a substrate, it shows an N-plus semiconductor, it shows an N-plus semiconductor on the other side, a source a drain, a gate electron, it shows a silicon nitride gate insulation, if Professor Luckovsky is right in his drawing, hasn't he—doesn't this drawing describe the Claim 1 in your Patent Number '636?

THE COURT: Now you can translate that, can't you?

THE INTERPRETER: I will try.

[230] THE WITNESS If you take this Luckovsky drawing to mean the gate insulating layer is directly touching the semiconductor, then the answer would be yes. That is also indicated in a

drawing in the Nakagawa '477. As mentioned before, also, in prior art section of my '636 patent, the word sandwiched is used.

BY ATTORNEY BERG

Q. My question for you, then is: If Luckovsky's drawing is accurate, doesn't it show me features of claim 1 of the '636 patent than the Nakagawa '477?

A. I don't really think it makes much sense to accept that assumption, however. The big difference between the patent and the Nakagawa is that in the '968 Patent there is no particular indication about impurities in the I-layer.

ATTORNEY BERG: Exactly.

Q. And where you learn about—that's the bigger difference between your—strike that.

The bigger difference, you are telling us, between the '968 and Claim 1 of your patent—let us take Claim 1 of '636—is the failure to tell how to reach low levels of impurities; is that a fair statement?

A. Yes. It does not say that that's to be used in the channel layer.

[231] Q. Now, sir

THE COURT: Mr. Berg, before you go on, this document, does the record show what—where it came from and what role it played?

ATTORNEY BERG: Yes, sir. This is the first embodiment There are two embodiments in the Canon '968. They enclose in the '968.

THE COURT: Yes, but whose drawing is this?

ATTORNEY BERG: His expert, Professor Luckovsky.

THE COURT: In other words, rather than use the Japanese patent itself, fully translated, you are using his expert 'a rendition of what it discloses?

ATTORNEY B&W: Yes, sir.

And he is, as I understand it, saying here, he has now read the embodiment, that is not, it's a diagram that is not, displayed in the Canon untranslated portion. It's not shown at all. But if you draw what's described in the untranslated portion, you get this Configuration.

THE COURT: All right, go on.

ATTORNEY BERG: May I confer for just a moment, your Honor?

THE COURT: Yes, you may.

ATTORNEY BERG: I am corrected, your Honor.

There was no drawing of this of this in the '968.

* * * *

Testimony of Shumpei Yamazaki, April 1, 1998 re Canon '968.

[66] BY ATTORNEY GOODWIN

Q. Do you know whether you specifically pointed out and discussed the '968 laid-open application in the IDS, that the examiner could examine it?

A. You mean at some point here in the remarks area?

Q. Why don't you go ahead, if you could find it there.

A. There is a references to the'968 at page SEC277, in the bottom paragraph.

ATTORNEY GOODWIN: Thank you; Dr. Yamazaki. I'll pass the witness.

(3)

No. 00-127

Supreme Court, U.S.
FILED
AUG 24 2000
CLERK

In the Supreme Court of the United States

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Petitioner,

v.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., AND SAMSUNG SEMICONDUCTOR, INC.,
Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENTS IN OPPOSITION

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QUESTION PRESENTED

In this case, highly material information in a Japanese prior art reference that would have rendered the claimed invention unpatentable was found to have been concealed with an intent to deceive the PTO by a knowledgeable Japanese applicant experienced in the United States patent procurement process and disclosure duties. The applicant recognized such information was not in a preexisting, partial English translation of the Japanese reference but intentionally submitted only that partial translation and a misleading "concise" statement of relevance to the PTO which did not alert the examiner to the important but untranslated information.

The patentee's testimony as to his alleged subjective beliefs at the time was rejected as wholly incredible, and the evidence was found to demonstrate that the inequitable conduct as to the patent-in-suit was part of a larger "sophisticated, subtle, and consistent effort to hide the ball from the PTO in a manner plainly at odds with an applicant's duty of candor, good faith, and honesty . . . [as] part of an intentional, not accidental or inadvertent, plan to mislead the PTO." Given that petitioner did not or could not demonstrate any error in the district court's factual findings, the question presented is:

Did the district court and the Court of Appeals properly reject that applicant's belated attempts to manufacture a legal excuse for its demonstrated inequitable conduct on grounds that: (1) the full, untranslated Japanese reference was given to the PTO and initialed by the examiner; (2) the PTO rules do not require a complete English translation; and (3) the applicant accurately described the one material feature from the reference (out of several) that the applicant unilaterally elected to disclose?

PARTIES TO THE PROCEEDING

The parties to the proceeding in the United States Court of Appeals for the Federal Circuit were petitioner Semiconductor Energy Laboratory Co., Ltd. and respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Semiconductor, Inc.

RULE 29.6 STATEMENT

For purposes of S. Ct. R. 29.6, Samsung Electronics Co., Ltd. states that it is a publicly traded corporation organized under the law of the Republic of Korea. It has no parent or publicly traded affiliates as those terms are commonly employed under United States law, and there is no parent or publicly traded company owning 10% or more of its stock. Samsung Electronics America, Inc. and Samsung Semiconductor, Inc. are not publicly traded.

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In the Supreme Court of the United States

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ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENTS IN OPPOSITION

Respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Semiconductor, Inc. (collectively "Samsung") respectfully request that this Court deny the petition for a writ of certiorari filed by Semiconductor Energy Laboratory Co., Ltd. ("SEL") in this case.

The Federal Circuit's opinion is reported at 204 F.3d 1368 (Fed. Cir. 2000), and is reprinted at Petitioner's Appendix ("A.") 1a-26a. The district court's two opinions providing the extensive factual findings demonstrating SEL's inequitable conduct are reported at 4 F. Supp. 2d 477 (E.D. Va. 1998) and at 24 F. Supp. 2d 537 (E.D. Va. 1998), and are reprinted at A. 43a-83a and A. 84a-99a, respectively.

CONSTITUTIONAL, STATUTORY AND REGULATORY PROVISIONS INVOLVED

There are no constitutional or statutory provisions at issue in this case. Inequitable conduct provides an equitable defense to a charge of patent infringement. "The concept of inequitable conduct in patent procurement derives from the equitable doctrine of unclean hands: that a person who obtains a patent by intentionally misleading the PTO ["Patent and Trademark Office"] can not enforce the patent." *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1394 (Fed. Cir. 1988); *see Precision Instrument Mfg. v. Automotive Maintenance Machinery Co.*, 324 U.S. 806, 814-16, 819 (1945); *Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 244-47 (1933).

As such, inequitable conduct is an equitable doctrine under which patents can be held unenforceable where it is proven by clear and convincing evidence during subsequent litigation before a district court that the applicant knowingly withheld information material to patentability from the examiner with an intent to deceive the PTO into issuing the patent. *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178, 1180-81 (Fed. Cir. 1995); *Kingsdown Med. Consultants, Ltd. v. Hollister Inc.*, 863 F.2d 867, 872, 877 (Fed. Cir. 1988). The starting point for determining the "materiality" prong of an inequitable conduct inquiry is 37 C.F.R. § 1.56 ("Rule 56"). *Critikon, Inc. v. Becton Dickinson Vascular Access, Inc.*, 120 F.3d 1253, 1257 (Fed. Cir. 1997). This contains the PTO's criterion for information that is material to patentability. *See* Pet. 2-3; A. 104a-106a.

STATEMENT OF THE CASE

The Federal Circuit's inequitable conduct decision cannot be reviewed in isolation from the district court's

detailed opinions. A. 43a-83a and A. 84a-99a. For purposes of SEL's petition, the relevant facts are those found by the district court and affirmed by the Federal Circuit as fully supported by the record. Yet, SEL's petition persists in presenting its rejected, discredited, and incredible version of its behavior and beliefs as if the prior judicial proceedings never occurred and as if this Court were free, even if so inclined, to make contrary findings in the first instance.

As SEL has done at every step of the review process in this case, it submits a Statement of the Case that "advanc[es] essentially the same arguments that were advanced ... at the hearing and ultimately found unpersuasive." A. 86a-87a n.5. Moreover, despite SEL's attempt before this Court to recast this case as one involving a federal court's review of agency action or a court's failure to defer to agency regulations, the inequitable conduct determination at issue was not made by the PTO, but by the district court following a seven-day trial devoted solely to the inequitable conduct issue during which Dr. Yamauchi, the inventor of the patent-in-suit and president of SEL, testified at length twice.

After the trial, the district judge issued detailed findings based on the conflicting evidence and testimony presented to him. The district court resolved all issues of credibility against SEL's witnesses Drs. Yamauchi and Lucovsky. A. 53a n.8. Upon affirming the district court's factual findings, the Federal Circuit concluded that the district court exercised no abuse of discretion in holding the '636 patent unenforceable. A. 16a-17a. The Federal Circuit agreed that SEL's inequitable conduct was demonstrated when it provided a misleadingly incomplete, partial English translation of the Japanese Canon '968 reference and a narrow and incomplete concise statement – a statement that was supposed to alert the examiner to the relevance of the

reference – but which instead concealed highly material aspects of the untranslated portions of the Canon reference. A. 16a-17a. The courts below concluded that Dr. Yamazaki intentionally and effectively concealed the most important features of the Canon reference from the PTO. Based on this record, no other conclusion was even possible.

A. SEL, Dr. Yamazaki, and The '636 Patent

Since approximately 1980, SEL has filed over 5,000 patent applications worldwide, and received approximately 1,500 U.S. and foreign patents. A. 44a. Dr. Yamazaki, a solid-state physicist, is the inventor or co-inventor on most of SEL's 1500 worldwide patents, including the '636 patent-in-suit. A. 44a. The '636 patent, given its revenue generating potential, was particularly important to Dr. Yamazaki; that potential clearly caused him to compromise his fundamental duty of candor to the PTO. A. 77a.

As SEL's president and major shareholder, Dr. Yamazaki is very experienced with the patent application process in the United States. As he testified, "patents are my life. They are very important to me." A. 77a. He conceded that he understood the duty of candor imposed upon applicants by the PTO. A. 55a n.11. Thus, SEL's premise in its petition that Dr. Yamazaki did not have advance notice of the established disclosure duties on all applicants for U.S. patents has already been soundly rejected, and cannot be accepted now. Pet. 23.

The asserted '636 claims are directed to a thin film transistor, a type of insulated gate field effect transistor ("IGFET") used in active matrix liquid crystal displays which are commonly used as screens in laptop computers. A. 44a. The claims generally describe a combination of an IGFET that includes a source, a drain, a silicon nitride gate insulator

and another insulator, a conductive gate, and an intrinsic amorphous silicon channel region having impurities (oxygen, nitrogen, and carbon) at concentrations of 5×10^{18} atoms/cm^3 or less. A. 44a. The district court found that the combination of the specific structure together with the low impurity levels constitutes the claimed invention of the '636 patent. A. 44a.

B. SEL's Inequitable Conduct Regarding The '636 Patent

In seeking the '636 patent, SEL submitted the entire 29-page Japanese language version of the Canon Japanese Laid Open Application No. 56-135968 ("Canon '968" or "Canon") to the PTO but only provided a one-page English translation of selected portions of it. A. 51a-52a. The district court expressly found that the untranslated information in the Canon '968 reference satisfied the test in Rule 56 for "materiality" on three separate grounds: it was not cumulative of prior art submitted to the PTO, it established a prima facie case of unpatentability in combination with other information, and it refuted arguments that SEL made during prosecution.[1] A. 52a-56a.

The district court found "the untranslated portions of Canon . . . contain a more complete combination of the elements -- the intrinsic amorphous silicon, the silicon nitride gate insulator, and the admonition to avoid impurities -- that are claimed in the '636 patent itself." A. 54a-55a; *see also* A. 50a (and cases cited).

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[1] Under Rule 56, "information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and (1) [i]t establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) [i]t refutes, or is inconsistent with, a position the applicant takes in: (i) [o]pposing an argument of unpatentability relied on by the Office, or (ii) [a]sserting an argument of patentability." 37 C.F.R. § 1.56(b). A. 105a.

> [T]he untranslated portions of the Canon '968 application and the Tsai article, taken together, would disclose a device having every element of the asserted claims of the '636 patent. As Dr. Fonash put it, a fully translated Canon '968 application provides a "good blueprint" for making the exact device described in the '636 patent, and additionally provides the admonition to avoid impurities.

A. 55a. The district court held that the whole Canon '968 with the Tsai article[2] would have rendered obvious, and thereby not patentable, the claims of the '636 patent. A. 91a n.13; A. 55a. The Federal Circuit agreed. A. 9a-10a. In other words, a proper disclosure of the entirety of the teachings of the full Canon '968 reference would have meant SEL and Yamazaki would never have received the '636 patent in the first place.

Dr. Yamazaki, a native of Japan who is fluent in Japanese and a solid state physicist (A. 12a), read and clearly understood the Japanese Canon reference, but decided that only parts should be translated and submitted to the PTO with the full Japanese version (A. 52a-53a). As the district court found, "given that Dr. Yamazaki decided to submit just a partial translation of Canon, it is simply not credible that Dr. Yamazaki was unaware that the untranslated portions of the Canon '968 application disclosed the additional elements described in his '636 patent application" because those elements were the basis for SEL's patentability argument. A. 78a; A. 78a-79a (the evidence points clearly and convincingly to the conclusion that SEL knew that a full translation of Canon would decrease the possibility that the '636 patent would issue and that SEL knowingly concealed

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[2] The "Tsai article" is another prior art reference that was material to the prosecution of SEL's patent. A. 56a.

the full importance of the reference in an effort to mislead the PTO).

After seven days of trial, the district court concluded that, whenever there was a conflict, SEL's witnesses were not as credible as Samsung's witnesses. A. 53a n.8. Moreover, SEL's contrived, after-the-fact allegations of "good faith" could not overcome the overwhelming evidence of SEL's "sophisticated, subtle, and consistent effort to hide the ball from the PTO in a manner plainly at odds with an applicant's duty of candor, good faith, and honesty." A. 82a.

> The record, as a whole, simply contains too many instances of information withheld, and references mischaracterized, to reach any conclusion other than that the withholding and mischaracterizations were part of an intentional, not accidental or inadvertent, plan to mislead the PTO.

A. 82a. As the Federal Circuit later recognized, such fact-finding on credibility and intent are entitled to great deference on appeal. A. 10a (citing *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1180-81 (Fed. Cir. 1995)). *See also Critikon, Inc. v. Becton Dickinson Vascular Access, Inc.*, 120 F.3d 1253, 1255 (Fed. Cir. 1997).

The untranslated portions of the Canon '968 (which were not described in the applicant's concise statement of relevance), in combination with Tsai, would render the '636 patent obvious under 35 U.S.C. § 103. Since any non-cumulative reference which would render the patent obvious is highly material, the evidence of intentional deception identified by the district court was well in excess of what was needed to support its finding that SEL committed inequitable conduct. Thus, the Federal Circuit agreed that the district court correctly found that SEL and Dr. Yamazaki acted with

an intent to mislead the PTO into allowing the '636 patent to issue. A. 10a-17a.

REASONS FOR DENYING THE WRIT

SEL's petition seeks review of a straightforward, case-specific application of established inequitable conduct doctrine to the particular circumstances of a foreign applicant that intentionally misled the PTO regarding highly material information known to the applicant from his review of an important prior art reference written in his native language. Having already failed four times (at trial, on reconsideration, on appeal, and on rehearing) to convince any federal judge that its intentional concealment of invalidating prior art from the PTO could be condoned, SEL's final attempt to avoid the consequences of its fraudulent behavior in obtaining the '636 patent must now here be rejected for three reasons.

First, no important unsettled question of federal law is presented by this case. The doctrine of inequitable conduct is well defined and the PTO's rules clearly set forth an applicant's duty to disclose information material to patentability. This case merely applies these well-settled rules and principles to the facts as found by the court below. As such, the petition should be denied.

Unable to mount any serious challenge to the facts found by the district court, SEL alleges that the Federal Circuit's opinion affirming the district court's judgment somehow extends the inequitable conduct doctrine well beyond its proper scope in disregard of the PTO's regulations and rule-making authority. Indeed, SEL unabashedly argues that it did all that is required under PTO rules, and the Federal Circuit erred in requiring anything more. As demonstrated by the lower court's opinions and findings,

SEL's assertions disregard the record, distort the PTO's regulations, and defy common sense.

To allow any applicant to knowingly conceal highly material prior art from the PTO, no matter in what language or manner that information was originally discerned by the applicant, would irreparably undermine the fundamental processes of the United States ex parte patent prosecution system. All applicants are subject to the same disclosure duties, which by necessity include disclosing material information to the PTO in a manner that reveals rather than conceals. SEL's implicit suggestion that foreign applicants are treated differently or unjustly burdened in their dealings with the PTO is simply wrong. Every applicant has the same obligation under the PTO's disclosure rules.

Any inequitable conduct inquiry must focus on whether there was material, non-cumulative information that the applicant knew about and failed to disclose, and whether it did so with an intent to mislead the PTO. Rule 56, A. 104a-106a. As the district court found, that is exactly what happened here. After a seven-day bench trial, during which Dr. Yamazaki testified twice, Judge Ellis found Yamazaki's deliberate misconduct was part of "a sophisticated, subtle, and consistent effort to hide the ball from the PTO" that reflected SEL's "intentional, not accidental or inadvertent, plan to mislead the PTO."

SEL submitted the Japanese Canon '968 reference to the PTO without translating highly material portions to English or otherwise giving the PTO any basis for learning that the untranslated portions of that reference would have any potential impact on the patentability of the claims. Indeed, SEL made it look like no further translation was needed. As the district court found: Dr. Yamazaki read and understood the Japanese Canon '968 reference; consciously

decided what to selectively reveal to the PTO; and acted with an intent to deceive the PTO so that the potentially valuable '636 patent would issue without SEL having to overcome the teachings of that untranslated information.

The district court found the untranslated information, in combination with other references known to Dr. Yamazaki, would render the invention claimed in the '636 patent obvious under 35 U.S.C. § 103. The Federal Circuit agreed. Not only was Dr. Yamazaki found to know of that high materiality, but SEL's "concise statement" of Canon's relevance disclosed only one element of the '636 patent without revealing that untranslated parts disclosed additional elements that formed the basis for SEL's patentability arguments. In short, SEL's explanation was so concise as to be affirmatively misleading, and was found to remove any incentive for the examiner to investigate the Canon reference further or to obtain a full translation of it.

This was no innocent mistake, but an intentional deception. Dr. Yamazaki, SEL's president and chief inventor, is intimately involved in prosecuting his patents, and has a sophisticated knowledge of the patent process. Consequently, the district court correctly found that he knowingly violated his duty of candor to the PTO to secure the important '636 patent. The district court found his testimony to be incredible, particularly that he was unaware that the untranslated portions of Canon contained a more complete combination of the elements claimed in the '636 patent than anything else before the PTO. Because a full disclosure of Canon would decrease the likelihood that the '636 patent would issue, SEL knowingly concealed the importance of the Canon '968 by submitting only a partial English translation and a misleadingly incomplete "concise" explanation in English to intentionally deceive the PTO.

Second, the case does not present an important unsettled question as to whether the scope of the duty of disclosure compels submission of translations of all art to the PTO. Attempting to distract this Court from its inexcusable conduct, SEL complains the result in this case means that submitting a foreign language reference to the PTO was not a disclosure and that SEL had a duty to translate the entire Japanese version of Canon. SEL's legalistic word games are designed to obscure its inequitable conduct. In this case, both the district court and the Federal Circuit easily and correctly recognized that submitting a Japanese language reference to the PTO cannot be equated with being a legally-adequate disclosure of the material information known by the applicant to be in that reference.

As correctly recognized by the Federal Circuit, "the duty at issue . . . is the duty of candor, not a duty of translation." Relevance alone does not create a duty to translate a foreign language document, but *known relevance* requires an applicant to fulfill its duty of candor by informing the PTO of that material information. SEL's intentional deception cannot be excused merely because the concealed information was learned from a foreign language reference that SEL did not need to translate into English.

As the Federal Circuit aptly noted, "SEL's contention that the examiner must have both read and fully understood the entire untranslated Canon reference based on his having read the misleadingly incomplete one-page translation and concise statement is absurd." Contrary to SEL's apparent premise, there can be no presumption that examiners will understand foreign languages or will translate all foreign language documents submitted, particularly in the absence of any reason or incentive to do so.

Third, this case does not present any question of federal patent policy or any conflict with this Court's prior decisions. To the extent the petition argues that rules of law were misapplied, such arguments are at odds with the record below. Accordingly, the petition lacks merit and should be denied.

SEL's tactic throughout has been to direct the reviewing court's attention to what SEL did disclose and away from what it did wrong. However, inequitable conduct due to a willful misrepresentation cannot be overcome by reference to other information that may have been properly disclosed. Moreover, an applicant does not have and cannot be given unbounded discretion to selectively choose what to disclose or to describe. Under the established facts of this case, the only possible conclusion was that SEL's English explanation of the Japanese Canon reference was far too concise to satisfy its duty of candor.

SEL previously tried to dramatize its appeal to the Federal Circuit as being a "major test" of inequitable conduct doctrine. The Federal Circuit rejected that argument. Applying the proper standards of review, the Federal Circuit examined the record and held that the district court understood the law, made the proper analysis, and based its judgment on detailed findings supported by the evidence at trial. SEL's petition should be denied.

I. SEL'S HINDSIGHT ATTEMPTS TO CREATE LEGAL EXCUSES FOR ITS PROVEN INEQUITABLE CONDUCT WERE PROPERLY REJECTED

Before the Federal Circuit, SEL failed to show any clear error in the district court's underlying findings, balancing of the relevant factors, or ultimate discretionary

determination that the '636 patent was properly held to be unenforceable. A. 26a. Undaunted, SEL's petition again reurges the same distorted reading of the PTO's rules and the applicable case law as providing a defense for SEL's demonstrated inequitable conduct. As held by the district court and the Court of Appeals, such manufactured excuses are legally meritless and directly contrary to the facts as found.

A. Merely Submitting A Foreign Language Reference Does Not Mean All Material Information Has Been Disclosed To The PTO

SEL argues that the new PTO rules do not require applicants to translate foreign references into English, so it cannot be faulted for not translating the entire Japanese Canon reference. However, that misdirects the relevant inquiry. Whether or not a foreign reference is translated into English, the federal courts (and the PTO) clearly do impose a duty to inform the PTO in a meaningful way of all material information known to the applicant, regardless of what language it was in when the applicant learned of it. Otherwise, applicants could simply avoid their duty to disclose material information if they learn it by reviewing non-English language publications.

The district court clearly did not impose a blanket obligation on SEL to translate all foreign language documents, and did not find that SEL had committed inequitable conduct for concealing material information of which SEL and Dr. Yamazaki were unaware. Here, Dr. Yamazaki was found to have read and understood a highly relevant Japanese prior art reference, and knowingly acted to conceal from the PTO material aspects of that reference that would have created a *prima facie* case of unpatentability. This case was not about creating a duty to translate foreign

references, but about SEL's clear violation of every applicant's duty of candor to the PTO.

SEL's unsupported assertion that foreign applicants for United States patents "expect to submit the prior art from their countries in their native language" (Pet. 17) is unreasonable, and cannot justify its corresponding suggestion that the PTO's rules accept, much less encourage, such activities. Under the rules, material information in a foreign document can be provided to the PTO by a full translation or by a statement of relevance that allows an examiner to make an informed decision whether the information is indeed sufficiently material that a full translation is needed.

To properly discharge its duty of candor, SEL could have translated more of the Canon '968, or could have described the untranslated, relevant teachings of Canon in the "concise" statement of relevance. SEL intentionally declined to do either. Thus, SEL's culpability did not stem from its failure to provide a full English translation of Canon to the PTO, but rather from its failure to adequately inform the PTO (in English) of that reference's known materiality. That is neither new law nor a departure from existing law or regulations, but merely a proper application of such law to the particular facts of this case.

B. SEL's Alleged Reliance On PTO Rule 98 As Providing A Legal Excuse For Its Inequitable Conduct Was Properly Rejected

SEL further argues that Rule 98(c) does not impose a legal obligation to prepare or submit any more of a translation than already existed. The district court disposed of this argument as follows:

> In relying on Rule 98(c) to excuse the failure to submit a fully translated version [of Canon] to the

> PTO, SEL places more weight on the rule than it can bear. Rule 98(c) requires an applicant to submit any translations of a reference that they might possess. But that rule provides a floor for required submissions of translations of foreign applications, not a ceiling; it is by no means an excuse or a license for concealing material portions of a prior art reference.

A. 91a. That rejection of SEL's attempt to find a "safe harbor" for its inequitable conduct in Rule 98 was properly affirmed by the Federal Circuit. A. 13a.

According to SEL, the Federal Circuit's decision "suggests" that an applicant now must refrain from submitting a pre-existing English translation even though PTO rules require that it be submitted. *See* Pet. 20 n.19. However, the only logical interpretation of the Federal Circuit's holding, and of the applicable PTO rules, is that an applicant cannot fail to inform the PTO of highly material aspects of a non-English reference "presently understood" by the applicant, and then excuse its breach of the duty of candor by arguing that its incomplete disclosure fully complied with the rules because a more complete English translation had not previously been made.

If the Canon '968 reference had been written in English, and its materiality known to SEL, SEL's intentional decision to submit only one page and not to disclose the material information on the other twenty-eight pages would unquestionably support a finding of inequitable conduct. The result can be no different where an applicant knowingly fails to disclose the same material information learned from a reference written in that applicant's native language.

SEL's assertions that a patent applicant should be entitled to conform its conduct to the PTO rules ring hollow. Rule 98 does not allow applicants that do not need a written English translation to understand non-English prior art to avoid disclosing material information known by the applicant to the PTO. *See* Duty of Disclosure, 57 Fed. Reg. 2021, 2031 (1992), Reply to Comment 74, reprinted in the Respondents' Appendix ("R") 4a-5a (noting that most PTO examiners do not have the ability to understand information which is not in English, that the PTO will not routinely translate information submitted in a non-English language, and that applicants are required to aid the examiner by complying with the requirements for a concise explanation in 37 C.F.R. § 1.98(3)). Thus, not only did SEL not comply with the spirit of the rules, it did not even comply with their letter.

C. The Examiner Cannot Be Presumed To Have Understood The Untranslated Portions Of The Japanese Reference Not Brought To His Attention By SEL

No legal precedent or PTO regulation creates a presumption that examiners read and understand foreign languages or will have every foreign language document translated. That appears to be a matter of common sense to everyone but SEL. Nevertheless, SEL tries to transform a sentence in the Manual of Patent Examining Procedure ("MPEP") § 609C stating that "[t]he examiner should not require a translation be filed by the applicant" (Pet. 4) into a rule that an applicant can never be faulted for not supplying an English translation to the PTO.[3] However, the rest of

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[3] Although the Manual of Patent Examining Procedure ("MPEP") has no binding effect on the court, because its provisions represent the PTO's interpretation of statutes and regulations it is due deference. *Molins PLC v. Quigg*, 837 F.2d 1064, 1067 (Fed. Cir. 1988).

section 609C reveals SEL's overextension of the presumption that examiners will do their jobs.

According to *MPEP* § 609C, submitted information "which is in a non-English language will be considered in view of the concise statement submitted and insofar as it is understood on its face, e.g., drawings, chemical formulas, in the same manner that non-English language information in Office search files is considered by Examiners in conducting searches." A. 122a. In other words, foreign language references are considered only to the extent that information in them can be discerned by an English-speaking examiner. Indeed, the *MPEP* states that the need for the concise statement of relevance is directed to features that are not in the English partial translation. A. 119a. If anything, the *MPEP* confirms that the examiner must rely on the concise statement of relevance submitted by the applicant. *See also* Duty of Disclosure, 57 Fed. Reg. 2021, 2031 (1992), Reply to Comment 74, R. 4a-5a. Dr. Yamazaki's statement which deals only with the features of Canon which were translated – the silicon nitride gate insulator – is thus particularly objectionable. *Compare* A. 165a (SEL's pre-existing partial translation), *with* A. 125a (SEL's information disclosure statement containing SEL's concise statement of relevance of the Canon '968).

MPEP § 609C also instructs that "[t]he examiner should not make any comment such as that the non-English language information has been considered to the extent understood, since this is inherent." A. 122a. Apparently, an examiner's inability to read foreign languages is not inherent to SEL, who asserts that it satisfied the rules by providing the Japanese reference to the PTO. While SEL places great weight on translation being available to the examiners (*e.g.*, Pet. 20 n.19, 21 n.20), and even suggests that the examiner might have read and understood Japanese (Pet. 20 n.19),

there is no presumption that an examiner will understand a foreign language reference or will even know when and what to translate into English.

MPEP § 609C also states that "[t]he examiner need not have the information translated unless it appears necessary to do so." A. 122a. Here, there is nothing on the face of the Japanese version of Canon to put an English-speaking examiner on notice of the material information discernible by one who understands Japanese, like Dr. Yamazaki. *See* Canon '968 Patent, reprinted at A. 152a-162a. Moreover, as the district court found, "'SEL's brief statement of relevance identifying only the silicon nitride gate as being pertinent, coupled with the partial translation disclosing that element, certainly removed any incentive [for the examiner to secure a full translation].'" A. 91a n.12 (quoting A. 78a).

D. An Incomplete Disclosure Of Relevance Is Not Excused Because It Does Not Misrepresent What It Does Not Disclose

According to SEL, it "technically" met the "minimum" requirements of the PTO rules because its statement of relevance was concise, accurate, and made by the person most knowledgeable about Canon. Once again, SEL misdirects the relevant inquiry. The dispute over Canon is not over the accuracy of what SEL did disclose, but over what SEL knew was material to patentability but intentionally concealed from the PTO.

By its terms, Rule 98(a)(3) requires "[a] concise explanation of the relevance, as it is presently understood by the individual . . . most knowledgeable about the content." A. 107a. SEL ignores that the district court found as a matter of fact that Dr. Yamazaki knew of Canon's materiality at the

relevant time, and that finding was affirmed as not clearly erroneous. A. 16a. That finding means that SEL's concise statement did not inform the PTO of Dr. Yamazaki's "present understanding" of the entire materiality of Canon '968. Hence, contrary to SEL's premise, it did not even "technically" comply with Rule 98.

According to SEL, the PTO's rules only require a concise explanation that satisfies a "subjective" standard of what was understood by the most knowledgeable individual. However, if that were true, no applicant will ever admit to understanding that a reference had material information not disclosed to the PTO. Here, such testimony by Dr. Yamazaki was found incredible, yet SEL asserts his rejected subjective beliefs should still be dispositive of SEL's disclosure obligations to the PTO.

SEL claims an applicant can be "selective" in discussing similarities between a foreign reference and the claimed invention, and asserts that one-sentence summary explanations have been commonplace. Pet. 22 n.22. However, there is an obvious difference between one sentence explanations of English language references, and one-sentence summaries of foreign language references, particularly where the untranslated and unexplained information in the latter is known to be material and intentionally undisclosed. Where an applicant's concise statement of relevance will be the examiner's sole basis for learning what material information might be in a foreign reference, SEL's standard under which the explanation can never be "too concise" is meritless.

As the Federal Circuit correctly realized, the MPEP's discussion of the rule governing a "concise statement" does not give an applicant complete discretion to disclose as much or as little as it knows about the reference as long as what is

stated is accurate. A. 13a-14a. Moreover, that rule cannot be interpreted as meaning that an applicant has discretion to "select" to disclose only some of what it deems to be important regardless of the other material information disclosed therein. If that were true, an applicant could avoid informing the PTO of a foreign reference that is only one element short of fully anticipating the claimed invention by only disclosing the single feature that is subjectively viewed as most relevant by the applicant. A. 14a-16a.

Simply put, the PTO rules cannot be interpreted as meaning that any statement of relevance, no matter how intentionally misleading or incomplete, is sufficient to fulfill one's duty of disclosure as long as nothing in the statement is false. Inequitable conduct is not limited to affirmative misrepresentations, but also includes concealing material information, coupled with an intent to deceive (as the district court found occurred in this case). *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178 (Fed. Cir. 1995). Finally, SEL's demonstrated inequitable conduct as to Canon '968 is not negated by showing that other information may have been disclosed accurately.

II. SEL'S ARGUMENTS REGARDING JUDICIAL DEFERENCE TO AGENCY RULEMAKING ARE MISPLACED

SEL claims that this is a case in which the Federal Circuit has imposed its "own notion about what procedures are best for obtaining information or achieving the [PTO's] goals" (Pet. 18) and has "declined to give judicial deference to the basic PTO Rules governing the core of the patent examination process" (Pet. 23). SEL's arguments regarding judicial deference to agency rulemaking are misplaced – there is no agency rulemaking at issue. Rather, this case is

about the application of the judicially crafted doctrine of inequitable conduct.

Inequitable conduct is a purely equitable doctrine under which patents can be held unenforceable where it is proven by clear and convincing evidence during subsequent litigation before a district court that the applicant knowingly withheld material information from the examiner with an intent to deceive the PTO into issuing the patent without knowledge of such information. *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178 (Fed. Cir. 1995); *Kingsdown Med. Consultants, Inc. v. Hollister Inc.*, 863 F.2d 867, 872 (Fed. Cir. 1988). A determination regarding the intent of the parties is a key element in any inequitable conduct determination. *Critikon, Inc. v. Becton Dickinson Vascular Access, Inc.*, 120 F.3d 1253, 1256 (Fed. Cir. 1997).

In part because of the fact-based nature of the inequitable conduct inquiry, the power to make inequitable conduct determinations lies squarely with the federal courts – not the PTO. Indeed, the PTO has expressly rejected the notion that it should make such determinations. In 1988, when considering the impending changes to Rule 56, the PTO announced that it would no longer make inequitable conduct determinations because:

> The [Patent & Trademark] Office is not the best forum in which to determine whether there was an 'intent to mislead', such intent is best determined when the trier of facts can observe the demeanor of witnesses subjected to cross-examination.
>
> * * *
>
> Also, it is the courts and not the Office that are in the best position to fashion an equitable remedy to fit the precise facts in those cases where inequitable conduct

> is established. Furthermore, inequitable conduct is not set by statute as a criteria for patentability but rather is a judicial application of the doctrine of unclean hands which is appropriate to be handled by the courts rather than by an administrative body.

PTO Implementation of 37 CFR § 1.56, 1095 Official Gazette 16 (October 11, 1988), reprinted at R. 6a-8a.

Indeed, knowing that courts and not the PTO would implement the doctrine of inequitable conduct, the PTO specifically provided interpretive guidance for the courts. For example, the PTO states the policy behind Rule 56 in the first two sentences of that rule,[4] because "the sentences aid in the understanding of the rule and will provide those involved in enforcing patents with an indication of the policy on which the rule is based." *See, e.g.*, PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021, 2025 (January 17, 1992), Reply to Comment 18, R. 3a.

Moreover, the PTO has acknowledged that any applicant who did not comply with its standards "will assume the risk that a *court* might find a violation of the duty of candor and good faith." PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021, 2027 (January 17, 1992), Reply to Comment 40, R. 3a (emphasis added). Clearly, the PTO itself recognizes that the determination of inequitable conduct is committed to the sound discretion of the courts.

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[4] "A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability." 37 C.F.R. § 1.56(a) ("Rule 56"), A. 104a.

Not only is judicial deference to the PTO antithetical to the equitable nature of the proceedings and the fact-finding required for an inequitable conduct determination, but it is also irrelevant in this case because, to the extent deference was required, it was given. The district court (as affirmed by the Court of Appeals) clearly followed the guidelines concerning materiality set out by the PTO when it made its inequitable conduct ruling.

As the Federal Circuit correctly noted, "[t]he duty at issue in this case is the duty of candor, not a duty of translation." A. 16a. With respect to that duty, the PTO has acknowledged that its rules cannot lay out each and every circumstance that could constitute a violation of the duty of disclosure: "rule [56] does not attempt to define the spectrum of conduct that would lack the candor and good faith in dealing with the Office which is expected of individuals who are associated with the filing or prosecution of a patent application." PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021, 2022 (January 17, 1992), A. 110a. The rule is therefore merely a guideline, and the PTO expects that courts will apply the rule in light of the "policy" the rules are intended to support. *See*, PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021, 2025 (January 17, 1992), Reply to Comment 18, R. 3a. Courts cannot be held to have violated any duty to defer to agency rules and guidelines when the PTO expressly states that it waives the right to hold inequitable conduct hearings and instead defers to courts which are better suited to evaluating intent and the demeanor of witnesses, and when courts are granted the authority to make interpretations in light of the PTO's policy, as the court did here in the context of the specific facts presented.

In its petition, SEL consistently attempts to direct this Court's attention away from the Rule 56 duty of disclosure,

which the courts below clearly applied appropriately, toward the Rule 98 rule on translations, which SEL alleges was inappropriately applied. SEL says that its Rule 98 information disclosure statement was "archetypal of concise statements in patent prosecutions" (Pet. 26) and that to require more is a clear case of the courts erroneously engrafting their own guidelines to the implementation of that rule. But SEL did not, in fact, comply with the rule on concise explanations of relevance regarding non-English language translations. The PTO specifically explained the purpose underlying the duty to provide a concise explanation of untranslated material is to aid the examiner in knowing when to request full translations:

> Applicants should note, however, that most examiners do not have the ability to understand information which is not in English and that the Office will not routinely translate information submitted in a non-English language. The examiner will consider the information insofar as it is understood on its face, e.g., drawings, chemical formulas, English-language abstracts, but will not have the information translated unless it appears to be necessary to do so. Applicants are required to aid the examiner by complying with the requirements for a concise explanation in § 1.98(a)(3) for information submitted in a non-English language.

PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021, 2031 (January 17, 1992), Reply to Comment 74, R. 5a.

Indeed, the MPEP makes additionally clear that the concise explanation required under Rule 98 is requested for the purpose of elucidating the significance of the *untranslated* portions of a reference, so that the examiner will

be aided in knowing when to request a full translation. A. 119a ("The requirement for a concise explanation of relevance is limited to information that is not in the English language.").

Thus, contrary to finding that SEL followed the rule and intended to aid the examiner with its "concise explanation," the district court held, and the Court of Appeals affirmed, that highly material information in the Canon '968 that would have rendered the claimed invention unpatentable was concealed with an intent to deceive the PTO. That concealment was made by Dr. Yamazaki, a knowledgeable applicant experienced in the United States patent procurement process and disclosure duties, in knowing contravention of the duty of disclosure and the purposes behind the "concise explanation" required by Rule 98. SEL's after-the-fact protestations of "good faith" through its facial compliance with the rule, should not overcome the overwhelming evidence of SEL's "sophisticated, subtle, and consistent effort to hide the ball from the PTO in a manner plainly at odds with an applicant's duty of candor, good faith, and honesty." A. 82a. The district court held, and the Court of Appeals affirmed, that SEL's explanation of its conduct was simply not credible. That factual determination, made after days of testimony, was exactly the kind of matter reserved for decision by the court.

By raising for the first time the specter of judicial deference in this case, SEL is simply pandering to the Court in an effort to manufacture an issue for review. The district court, as affirmed by the Court of Appeals, properly decided SEL's intent and credibility, and did so with respect for and in compliance with the policies underlying the PTO rules and the literal requirements of the rules. SEL's argument to the contrary should be rejected.

III. SEL'S DUE PROCESS ARGUMENTS ARE FACTUALLY UNSUPPORTED AND LEGALLY BASELESS

SEL has suggested that the district court's ruling on inequitable conduct and the Court of Appeals' affirmation of that ruling implicates due process concerns. Pet. 23. SEL claims that it did not have adequate notice of conduct, or an opportunity to defend against claims, which could potentially invalidate its patent. Pet. 23. Of course, SEL's claim ignores that, absent its inequitable conduct, its patent would not have issued and SEL would have no property of which to be deprived. Moreover, SEL does not even specifically state whether it is trying to raise procedural or substantive due process issues.

To the extent that SEL is claiming a deprivation of procedural due process, it unquestionably has no basis for that argument. SEL has had all the process it is due. It had a seven-day bench trial, a motion for rehearing before the district court, an appeal to the Federal Circuit, and a petition for rehearing and rehearing en banc to the Federal Circuit. SEL has had ample opportunity to explain its position to multiple levels of courts prior to the imposition of any liability, and at every turn has merely "advanc[ed] the same arguments that were advanced . . . at the [initial] hearing [which were] ultimately found unpersuasive." A. 86a-87a n.5. In this respect, SEL's position stands in stark contrast to the legal authority it presents in support of its position. *See* Pet. 26 (citing *Nelson v. Adams USA, Inc.*, __ U.S. __, 120 S. Ct. 1579, 1585 (2000)). In *Nelson*, the Court concluded a litigant was denied due process because he was "never afforded a proper opportunity to respond to the claim against him." 120 S. Ct. at 1585 (judgment amended to impose liability simultaneously with an amendment of pleadings adding the litigant). No such circumstance occurred here.

Any claim that, like the litigant in *Nelson*, SEL was not afforded procedural due process must be rejected.

Any claim that SEL was not afforded substantive due process must be likewise rejected. The thrust of SEL's *petition* argument is that, because it had no notice that its "facial" compliance with the rule on translations would be rejected and its patent held unenforceable, it was "deprived . . . of property without considering [its] reasonable reliance on PTO regulations." Pet. 28. In fact, SEL particularly complains that the Federal Circuit's opinion ignores this important point in that it "never discusses the reasonable reliance issue." Pet. 26.

There is, of course, a sound reason for the Federal Circuit's failure to discuss these points – SEL simply did not raise it below as presenting a due process violation.[5] But, even if SEL had placed the issue before the district court or the Court of Appeals, it would have been rejected below, as it should be here, because the argument is both factually and legally unsupported.

SEL's position that it did not have advance notice of how the court would interpret agency rules is simply factually inaccurate. As SEL's president and major shareholder, Dr. Yamazaki is very experienced with the patent application process in the United States. He testified, "patents are my life. They are very important to me." A. 77a. He conceded that he understood the duty of candor

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[5] SEL's failure to raise this point below as a denial of due process constitutes a waiver of the due process issue before this Court. *See, e.g., G.D. Searle & Co. v. Cohn*, 455 U.S. 404, 412 n.7 (1982) ("Because petitioner did not present this argument to the Court of Appeals, we do not address it."); *see also DeShaney v. Winnebago County Dept. of Social Servs.*, 489 U.S. 189, 195 n.2 (1989).

imposed upon applicants by the PTO. A. 55a n.11. Thus, SEL's premise in its petition that Dr. Yamazaki did not have advance notice of the established disclosure duties on all applicants for U.S. patents has already been soundly rejected, and cannot be accepted now.

Moreover, even if Dr. Yamazaki did not personally have notice of the duty of candor, SEL's patent prosecution counsel surely had notice of the duties of candor and of disclosure for foreign language references, and the potential for judicial review and invalidation through inequitable conduct proceedings. *See* PTO, *Duty of Disclosure,* Notice of Final Rulemaking, 57 Fed. Reg. 2021 (January 17, 1992), R. 1a-5a; *see also supra* Part I (extensive discussion of the C.F.R. and MPEP). SEL and Dr. Yamazaki had more than adequate notice that their intentional acts, which were calculated to and which did deceive the PTO, could result in the unenforceability of SEL's patent.

SEL's position is also legally insupportable. Regardless of any specific knowledge about how a court might interpret PTO rules of disclosure for foreign language references in light of the applicant's actual knowledge and overarching duty of candor, the idea that SEL did not have adequate notice that a court acting in equity could invalidate its patent is ludicrous. What SEL is really complaining about is that it had no adequate notice that the courts would be able to identify, appreciate, and punish its subtle scheme of fraud. SEL's position, if accepted, would allow any litigant denied relief by the courts on the basis of unclean hands to rely on its lack of specific notice of a well established equitable doctrine to create a due process claim. That cannot, and should not, be the law.

CONCLUSION

For the reasons stated above, SEL's petition for writ of certiorari should be denied.

Respectfully submitted,

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AUGUST 24, 2000

APPENDIX A

(Notice of Final Rulemaking)
57 Fed. Reg. 2021
(January 17, 1992)
(Pertinent Text)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1 and 10

[Docket No. 910764-1306]

RIN 0651-AA27

Duty of Disclosure

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of final rulemaking

SUMMARY: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to (1) clarify the duty of disclosure for information required to be submitted to the Office; (2) provide flexible time limits for submitting information disclosure statements including the requirement for a fee in certain cases; (3) eliminate consideration of duty of disclosure issues by the Office except in disciplinary and interference proceedings, and under other limited circumstances; and (4) eliminate the striking of patent applications which are improperly executed. The Office further is amending the Patent and Trademark Office Code of Professional Responsibility to define as misconduct a failure to comply with the rules on duty of disclosure. The rules as adopted strike a balance between the need of the Office to obtain and consider all known relevant information pertaining to patentability before

a patent is granted and the desire to avoid or minimize unnecessary complications in the enforcement of patents.

EFFECTIVE DATE: March 16, 1992. These rules will be applicable to all applicants and reexamination proceedings pending or filed after the effective date.

* * *

[57 Fed. Reg. 2025]

Comment 14. Three comments stated that the language of proposed § 1.56(a) required revision to remove all statements or suggestions which might allow a court to consider a pending (i.e., unissued) claim for the purpose of determining whether the duty of disclosure requirement was met in view of the fact that the proposed rule was intended to indicate that there is no duty to disclose information which is material to a pending claim unless that claim ultimately issues in a patent. One comment argued that a court might interpret "the duty of candor and good faith" to be broader than the particular duty of disclosure specified in other portions of the proposed rule.

Reply: The language of §§ 1.56 and 1.555 has been modified to emphasize that there is a duty of candor and good faith which is broader than the duty to disclose material information. Section 1.56 further states that "no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct."

* * *

Comment 18. Three comments stated that the first two sentences of proposed § 1.56(a) should be deleted since rules should simply instruct practitioners what to do without discussion of why they should do it or the philosophy involved.

Reply: The suggestion has not been adopted since the sentences aid in the understanding of the rule and will provide those involved in enforcing patents with an indication of the policy on which the rule is based.

* * *

[57 Fed. Reg. 2027]

Comment 40. Two comments suggested that proposed § 1.97(a) be modified so that the mechanism of proposed § 1.98 would not be the only acceptable technique for submitting information.

Reply: The Office has set forth the minimum requirements for information to be considered in §§ 1.97 and 1.98. These rules will provide certainty for the public of exactly what the requirements are, when the Office will consider information and when the Office will not consider information. Thus, applicants are provided with means for complying with the duty of disclosure by following the rules. If information is submitted in a manner so that it is not considered by the Office, applicant will assume the risk that a court might find a violation of the duty of candor and good faith which includes the duty to disclose material information.

* * *

[57 Fed. Reg. 2031]

Comment 69. Five comments questioned whether the requirement in proposed § 1.98(a)(3) would be satisfied by a statement that the references were cited in the prosecution of a parent application.

Reply: The requirement in § 1.98(a)(3) for a concise explanation of non-English language information would not be satisfied by a statement that a reference was cited in the prosecution of a parent application. The concise explanation must explain the relevance as presently understood by the person designated in § 1.56(c) most knowledgeable about the content of the information.

* * *

Comment 74. One comment stated that a sentence in the preamble discussion of proposed § 1.98(c) was burdensome because it would require submission of incomplete or inexact translations which may have been made of an item of information. The sentence in question reads:

> But if the individual has the ability to translate the non-English language into English and has done so for the purposes of reviewing the information relative to the claimed invention, the translation would be considered "readily available."

Another comment stated that proposed § 1.98(c) should be modified to require a translation if the non-English language document is to be considered by the examiner since the attorney would want to prepare an accurate translation of particularly relevant references. One comment suggested that § 1.98(c), or the preamble discussion, should make it clear that an English-language translation of a foreign

language material reference need not be submitted where an individual merely reads in the reference in its original language and translates it mentally but does not prepare a written translation. Five other comments requested clarification on this point.

Reply: The Office does not intend to require translations unless they have been reduced to writing and are actually translations of what is contained in the non-English language information. Applicants should note, however, that most examiners do not have the ability to understand information which is not in English and that the Office will not routinely translate information submitted in a non-English language. The examiner will consider the information insofar as it is understood on its face, e.g., drawings, chemical formulas, English-language abstracts, but will not have the information translated unless it appears to be necessary to do so. Applicants are required to aid the examiner by complying with the requirements for a concise explanation in § 1.98(a)(3) for information submitted in a non-English language.

* * *

APPENDIX B

Patent and Trademark Office
Implementation of 37 CFR § 1.56
1095 Official Gazette 16
(October 11, 1988)

(Pertinent Text)

The Patent and Trademark Office has been reviewing and discussing in conjunction with various private sector groups, its implementation of 37 CFR 1.56 which deals with the duty of disclosure and inequitable conduct. Determination of inequitable conduct issues requires an evaluation of the intent of the party involved. While some court decisions have held that intent may be inferred in some circumstances, consideration of the good faith of the party, or lack thereof, is often required. In several recent court decisions, a high level of proof of intent to mislead the Office was required to prove inequitable conduct under 37 CFR 1.56. See *In re Harita*, 847 F.2d 801, 6 USPQ 2d 1930 (Fed. Cir. 1988) and *FMC Corp. v. Manitowoc Co. Inc.*, 835 F.2d 1411, 5 USPQ 2d 1112 (Fed. Cir. 1988).

The Office is not the best forum in which to determine whether there was an 'intent to mislead', such intent is best determined when the trier of facts can observe the demeanor of witnesses subjected to cross-examination. The Office is not presently equipped to handle live testimony. Modifying Office procedures to do so would not be an effective utilization of resources. A court, with subpoena power, is presently the best forum to consider duty of disclosure issues under the present evidentiary standard for finding an 'intent to mislead.' The court proceeding involves two participating adverse parties. This is not the case in the

Office, since even 'protesting' parties are not permitted to participate under the Rules. Also, it is the courts and not the Office that are in the best position to fashion an equitable remedy to fit the precise facts in those cases where inequitable conduct is established. Furthermore, inequitable conduct is not set by statute as a criteria for patentability but rather is a judicial application of the doctrine of unclean hands which is appropriate to be handled by the courts rather than by an administrative body. Because of the lack of tools in the Office to deal with this issue and because of its sensitive nature and potential impact on a patent, the Office determinations generally will not deter significant litigation of the same issue in the courts on appeal or in separate litigation. Office determinations significantly add to the expense and time involved in obtaining a patent with little or no benefit to the patent owner or any other parties with an interest.

Accordingly, the Office will no longer investigate and reject original or reissue applications under 37 CFR 1.56 and to the extent 37 CFR 1.56 now requires the Office to do so, it is hereby waived. Likewise, the Office will not comment upon duty of disclosure issues which are brought to the attention of the Office in original or reissue applications except to note in the application, in appropriate circumstances, that such issues are no longer considered by the Office during its examination of patent applications. Examination of the lack of deceptive intent in reissue applications will continue but without any investigation of inequitable conduct issues. Applicant's statement of lack of deceptive intent normally will be accepted as dispositive except in special circumstances such as an admission or judicial determination of fraud or inequitable conduct.

* * *

This change in practice will not reduce incentives to disclose information to the Office promptly. A judicial finding of inequitable conduct or fraud will still render a patent unenforceable or invalid. Therefore, applicants will still be encouraged to comply with the Rule, as applied by the courts. Practitioners found to have participated in inequitable conduct or fraud shall be subject to disciplinary proceedings. 37 CFR Part 10.

* * *

Sept. 8, 1988 DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

FILED
SEP 6 - 2000
CLERK

(4)

No. 00-127

IN THE

Supreme Court of the United States

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Petitioner,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
and SAMSUNG SEMICONDUCTORS, INC.,
Respondents.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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* The citation to this case at p. 26 of the Petition should be corrected to read 411 U.S. 655, 674 (1973).

REPLY ARGUMENT

This case tests the limits of inequitable conduct d ctrine, so this Court can delineate the point at which judicial discretion improperly becomes the power to override agency choices and punish patent owners without fair warning.

The essential problem is that the Federal Circuit, dissatisfied with the PTO 1992 compromise scheme for dealing with prior art foreign language references, created two "duties" that the agency purposely eschewed. The PTO decided that the only duty regarding translation is the duty to submit all pre-existing full or partial translations. And the PTO decided that the only duty to describe foreign language references in English is for the applicant to select one or more highlights (similarities or differences) that the inventor subjectively deems relevant, subject to the rule that a narrow translation or explanation will create a narrow presumption of validity at trial.

The Federal Circuit decided here that courts may treat PTO disclosure Rules as a floor, not a safe harbor, and may impose further duties on applicants: a duty to supplement accurate pre-existing partial translations and/or a duty to explain all key teachings of foreign language references. The reasons to review this judicial activism is not only that it is overreaching and unfair, but that it vastly increases the costs and risks of obtaining patents, with such burden falling largely on foreign applicants.[1]

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[1] *See* Matthew W. Siegal, *To Translate or Not To Translate, That's the Question*, The Intellectual Property Strategist, Vol. 6, No. 8 (May 2000). The author estimates that in prosecutions involving foreign language references translating every potentially material foreign language reference could cost more than preparing and filing the patent application itself. The article ends with the statement that the ruling below may be remembered as the "Translators' Full Employment Act of 2000."

Samsung opposes certiorari (although it has cross-petitioned in No. 00-138) by asserting (1) that this case is fact-driven and typical, (2) that the PTO itself recognizes and favors the right of judges to ferret out novel schemes of deception, (3) that factual rulings can be construed to justify a finding of violation of Rule 98 by SEL, (4) that the ruling below was necessary to prevent the enforcement of an invalid patent, and (5) that SEL did not timely raise the issues raised in its petition. None of these contentions is correct. We will discuss each in turn.

1. This case is not fact-driven but is based on general approaches that likely will have far reaching and mischievous consequences. The case is based on a mere alleged failure to explain enough and thus is totally dependent on the two judge-created duties discussed above and on the strained notions that a *submitted* reference can be deemed "constructively withheld" and that a considered reference may be assumed to have been inadequately examined. It is undisputed that SEL submitted the full Canon '968 reference in the original Japanese, along with the only partial translation it had, and a concise explanation containing no false statements, and which named elements of the invention that were taught in the reference, deemed the reference relevant, and requested that it be considered, which it was. Pet. App. 135a (IDS), 149a (examiner initialing reference). SEL's fundamental point (never discussed by Samsung) is that in 1992 the PTO determined not to expose submitted references, foreign or domestic, to inequitable conduct challenge, and embodied this determination in PTO Rule 56. With regard to domestic references this principle remains unquestioned. One month ago, Judge Newman wrote for a unanimous Federal Circuit panel that "An applicant can not be guilty of inequitable conduct if the reference was cited to the examiner, whether or not it was [considered]. . . . Fiskars' citation as prior art defeats Hunt's charge that the Maruzen device was withheld with deceptive intent." *Fiskars, Inc. v.*

Hunt Mfg. Co., 2000 WL 1015080,*8 (Fed. Cir. July 24, 2000). Neither the language of Rule 56 nor the *Fiskars* opinion in any way suggests that the submission of a foreign language reference refutes inequitable conduct intent any less than the submission of any other reference.

The alleged factual findings that Samsung stresses as crucial illustrate the risk and uncertainty that vague duties create. It is essentially impossible for an applicant to make or obtain a one-page translation of a thirty-page reference which contains all arguably material passages or to write a one or two sentence concise explanation that is not open to challenge as somehow incomplete. As to the intent requirement, this case illustrates that an accused infringer may be able to skip over this burden simply by allegations (or presumptions) that the inventor knows the foreign language well, is a good scientist, and is familiar with the general principles of PTO practice. If such "facts" prove intent, and are not allowed to be refuted by the very act of voluntary submission itself, then every successful foreign inventor submitting references from his country is in danger of an adverse intent finding.[2]

Samsung stresses that the Canon '968 reference was "material," but the materiality concept was developed and applied to *withheld* references. The Canon reference, in

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[2] Samsung continues to emphasize Judge Ellis's original finding that SEL "deliberately" created a spotty partial translation and "deliberately" declined to translate further. *E.g.*, Opp at 4 (Dr. Yamazaki "decided that only parts should be translated and submitted"); Opp. at 15 ("intentional decision to submit"). Even Judge Ellis dropped his deliberateness finding in his second opinion after being reminded that the translation was pre-existing and had to be submitted as is pursuant to PTO Rule 98(c). Judge Ellis then retreated to his new theory that applicants have a duty to review every fragment they submit and make supplemental translations whenever such fragment may be incomplete. Pet. App. at 91a. That was the beginning of the "floor, but not a ceiling" approach embraced even more broadly by the Federal Circuit (Pet. App. at 13a) and creating the mischief that this Petition seeks to remedy.

contrast, was submitted and considered. Materiality is therefore not relevant. To the extent that Samsung is arguing that certain untranslated portions of Canon '968 could be viewed as material, it also fails to show why the applicant would have understood from the concise explanation rules that every arguably material aspect of a reference must be mentioned in English.

2. The PTO intended to remove inequitable conduct with respect to submitted or cited references and to prevent inequitable conduct second-guessing of the comprehensiveness of concise explanations. Samsung emphasizes that the PTO in 1992 recognized and favored the right of judges to ferret out novel schemes to deceive the agency. True enough, but the PTO by amending Rule 56 also clearly intended to eliminate inequitable conduct uncertainty with regard to submitted and cited references without distinction as between English and foreign language references. Moreover, the PTO changed the requirement from showing "the relevance" to the subjective requirement that the inventor state the relevance as he sees it at the time, with the further instruction from MPEP § 609A(3) that such explanation "may" indicate a particular paragraph or "might" point to "similarities." The PTO told the Bar in the Official Gazette that its changes were designed to prevent inequitable conduct second-guessing and that an applicant need not analyze references or combine references against himself. *See* Pet. App. at 112a-114a.

3. Rule 98(c), as clarified by MPEP § 609A(3), cannot be construed to find a violation by SEL on this record. In a desperate attempt to overcome clear evidence of the PTO's desire to protect inventors submitting concise explanations, Samsung argues (Opp. at 19) that SEL could have been found guilty of disguising the inventor's "subjective" view of relevance based on the district court's credibility and intent

findings.[3] However, contrary to Samsung's argument in this Court, the Federal Circuit was *not* willing to base its ruling on assumptions about the inventor's subjective intent. It relied instead on its strained reading of MPEP § 609A(3) as requiring mention of all key teachings despite its clearly permissive language. Samsung also overstates the district court's credibility ruling which related to instances in which Dr. Yamazaki was contradicted by other evidence. Pet. App. at 53a n. 8. Here, despite months of discovery, there was not a scintilla of documentary or testimonial evidence indicating that Dr. Yamazaki remembered the '968 anti-contamination passages, considered them similar to his teachings, or thought he had a duty to discuss them. Moreover, it is well established in evidence law that doubts about credibility can create no basis for a finding that the opposite is true. *Moore v. Chesapeake & Ohio Ry. Co.*, 340 U.S. 573, 576 (1951) ("disbelief of the engineer's testimony would not supply a want of proof"); *Janigan v. Taylor*, 344 F.2d 781, 784 (1st Cir. 1965) (disbelief alone cannot "support a finding that the opposite was the fact"). As we noted before, the district court's "finding" that Dr. Yamazaki read Japanese well, was a good scientist, and knew U.S. patent rules is simply a series of overly broad and unfair generalizations about successful foreign inventors, and provides no clear and convincing evidence of any actual knowledge or motive.

Indeed, Samsung's argument further illustrates the lack of deference the courts gave to PTO policies: The agency changed the concise explanation requirement from a "should have believed" standard to an "actually believed" one, but the district court judge relied entirely on reasoning about what the inventor should have believed, and is affirmed as "not

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[3] Samsung admits that the features of Canon '968 selected by SEL for discussion in the IDS were both accurate and material. Opp. at i. Moreover, Samsung does not challenge SEL's statement that the selected features could not have been more germane. *See* Pet. at 23 n. 23.

clearly erroneous" even though he obviously applied the old standard, not the new one. Moreover, Samsung ignores that MPEP § 609A(3) clearly instructs an inventor who "believes" in several "relevances" to mention less than all of them in his concise explanation.

Lastly, Samsung and the Federal Circuit could only find the necessary likelihood that the concise explanation would mislead the PTO by assuming that the agency would expect that concise explanations would leave out no aspect of relevance. In fact, the agency has carefully stated the opposite—that only highlights need be mentioned—and thus the PTO has no reason to assume that all or even most relevant features would be mentioned. MPEP § 609A(3).[4] Moreover, Samsung stresses (Opp. at 14) that the PTO needs detailed information regarding how many similarities are in a reference, while failing to explain why the PTO chose to accept foreign "X"/"Y" relevance rankings (in place of a concise explanation) that reveal nothing about the number of similarities. MPEP § 609A(3) (set forth in Pet. at 4).

4. The ruling below was not needed to protect Samsung from an allegedly invalid patent. Samsung stresses that unless its inequitable conduct victory is upheld, SEL will be able to collect large royalties on an invalid patent. Opp. at i ("would have rendered invention unpatentable") & 6 (same). Hardly. Samsung could find no grounds for asserting that the '636 patent was anticipated by prior art or claimed a product that was on sale before the date of the invention. It was left with the always debatable contention that the invention was an "obvious" combination of teachings in earlier art. Samsung moved for summary judgment on that theory, but

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[4] Samsung fails to respond to cases (*Johnson, Anderson, Monapat*) at pages 26-27 of the Petition that intent to mislead cannot be found in responses to governmental information requests that do not unambiguously seek comprehensive information.

Judge Cacheris ruled that SEL's arguments for nonobviousness were strong enough to justify a jury trial of the issue. Pet. App. at 34a-35a. It was not Judge Ellis's job in the inequitable conduct hearing to determine whether SEL's patent was invalid as obvious, since that issue already had been reserved for jury determination by Judge Cacheris. Judge Ellis's job was to determine whether SEL had *withheld* prior art material to a *prima facie* case of unpatentability, *i.e.*, one that, even if present, can be rebutted.

If SEL prevails in this Court, Samsung will be entirely free to argue its theory of obviousness to the jury. Under the PTO's 1992 regulations, it also will be able to argue that untranslated sections of Canon '968 create no presumption of administrative consideration in favor of SEL. *Cf. ALCO Standard Corp. v. TVA*, 808 F.2d 1490, 1497 (Fed. Cir. 1986). SEL accepts this consequence of its decision not to spend the money for full translations,[5] but believes it should prevail here because the PTO did not intend to allow lack of full translation to let accused infringers win their obviousness contentions during inequitable conduct pre-trial hearings merely by arguing that English language explanations of submitted references were not sufficiently fulsome.

5. SEL timely raised the issues in its Petition. As is apparent from the decision below, SEL continuously has maintained that it complied with the requirements of the PTO governing submission of foreign language references and, having done so, is not guilty of inequitable conduct. It could not properly complain of lack of deference to the PTO until the court below, with exclusive oversight over the PTO, ruled, in rejection of SEL's position, that PTO Rules are a "floor" and "not a ceiling," and that compliance with them

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[5] SEL would expect to prevail on Samsung's obviousness defense for, *inter alia*, the reasons set forth by Judge Cacheris in his opinion denying summary judgment. Pet. App. at 34a-35a.

does not create any safe harbor to insulate SEL from a judicial finding of inequitable conduct.[6]

The deference issue thus arose only when the court below held in contravention of Rule 56 held that a *cited* reference could be deemed "constructively withheld" and unexpectedly read MPEP § 609A(3) as requiring that a concise explanation in an IDS must include all "key teachings" despite the absence of any such statement in Rule 98(a)(3) or MPEP § 609A(3). Similarly, the due process issue did not arise until the court below interpreted MPEP § 609A(3) in a manner that no patent applicant could reasonably have anticipated and failed to examine whether SEL's reading of PTO Rules was sufficiently reasonable to negate intent to mislead. SEL then squarely presented the deference and due process issues in its combined rehearing petition, which was its first opportunity to complain that the court with exclusive supervision over the PTO was declining to defer to the PTO's formal Rules and was retroactively changing what was expected of patent applicants by those Rules without consideration of SEL's due process rights.[7] It is well settled doctrine in this Court that

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[6] SEL's arguments below were in any event deference arguments, since SEL's position was that the Federal Circuit was *bound* by PTO Rules 56, 98, and MPEP § 609A(3). Thus, SEL stated: "This court needs to clarify that there can be no basis for a finding of inequitable conduct when a patentee has complied fully with the PTO Rules governing the conduct in question." Brief for Plaintiff-Appellant, Nos. 98-1377, 99-1107, at 34 (Feb. 2, 1999). In its Reply Brief filed May 10, 1999 (p. 11), SEL stated: "This Court, with no notice to the PTO, should not change well-known ground rules to impose retroactively an amorphous and overly broad 'duty of candor.'" *See Pruneyard Shopping Center v. Robins*, 447 U.S. 74, 85 n. 9 (1980) (particular form of words not essential to adequate presentation of an issue).

[7] *See* Combined Petition for Panel Rehearing and Rehearing *En Banc*, Nos. 98-1377, 99-1103 (March 16, 2000). SEL wrote: "PTO Rules regarding the submission of foreign language references promulgated in 1992 after extensive rulemaking, are detailed, specific, reticulated, procedural regulations from an expert agency. Applicants must rely on

SEL timely raised the deference and due process issues. *See, e.g., Brinkerhoff-Faris Co. v. Hill*, 281 U.S. 673, 677 (1930) (due process issue timely raised if raised at first opportunity, which was on rehearing of state supreme court decision); *Douglas v. Buder*, 412 U.S. 430, 432 (1973); *see also United States. v. Penn. Ind. Chem. Corp.*, 411 U.S. 655, 674 (1973) (when appeals court reinterprets regulation, it must recognize lack of intent defense where agency guidelines reasonably led the applicant to believe his conduct was acceptable).[8]

6. In conclusion, there is a fundamental difference between the assumptions underlying Samsung's Brief in Opposition and the policy choices made by the PTO in 1992. The agency, after consulting with the patent Bar, decided for reasons of cost to impose no duty of translation of foreign language references on either the applicants or itself. It told applicants what it wanted from them, and, to avoid inequitable conduct risk to them, took steps to assure that applicants would not be troubled by inequitable conduct second-guessing. It warranted that it would examine all submitted references, whether or not it relied on its translation services, library of abstracts, or its other skills and resources.

Samsung, like the Federal Circuit, presumes that an inequitable conduct pre-trial hearing should have occurred here despite the reference at issue being submitted together with a pre-existing partial translation and a concise explanation mentioning some similarities, and that the only

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them. Court are expected *to defer* to them." *Id.* at 8 (emphasis added). SEL directly presented its new and unanticipated due process point, citing, *inter alia, United States v. Penn. Ind. Chem. Corp.*, 411 U.S. 655, 674 (1973). *Id.* at 10.

[8] Pennsylvania Industrial's principal brief in the Third Circuit shows that it did not raise the due process issue prior to the Third Circuit's decision. Brief for Appellant Pennsylvania Industrial Chemical Corp., No. 71-1840 (Oct. 30, 1971).

question is whether the district judge reached a plausible outcome. But the PTO's goal was to avoid such a hearing, not merely ensure that it came out alright. It is clear that if this ruling is not reversed, far more such hearings will occur, since large sums of money are at stake and no applicant can provide a partial translation or concise explanation that is not subject to challenge for something that it omits.

Judge Newman's recent decision in *Fiskars* states (in the context of a submitted English language reference *not* considered by the examiner) that "an applicant's citation of prior art in accordance with the rules of the PTO *precludes* a finding of withholding of that prior art with deceptive intent." 2000 WL 1015080, * 10 (emphasis added). She further ruled that it was sanctionable for an alleged infringer to waste the court's time with an inequitable conduct challenge involving a voluntarily submitted reference. These rulings highlight the anomalous and discriminatory nature of the Federal Circuit's ruling that SEL and other applicants submitting foreign language references are entitled to no safe harbor from compliance with PTO Rules.

Thus, this Petition is justified for two important reasons: (1) to make clear to all district courts faced with inequitable conduct allegations that the doctrine of inequitable conduct does not involve the creation of duties to inform the PTO of more than it wishes to know; and (2) that inequitable conduct allegations are rebutted by voluntary submission of references and by reasonable readings of PTO Rules and guidelines. Lastly, as we have noted before, review and reversal of the ruling below is necessary not merely because the Federal Circuit did not respect deference and due process principles, but also because its ruling has immediately created a patent application system that is expensive, uncertain, and arbitrarily biased, with the expense and uncertainty burden falling disproportionately on foreign applicants.

The Petition for a writ of certiorari should be granted.

Respectfully submitted,

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REPLY APPENDIX
(Federal Circuit Decision in FISKARS)

UNITED STATES COURT OF APPEALS,
FEDERAL CIRCUIT.

Nos. 98-1560, 98-1566.

FISKARS, INC. and FISKARS OY AB,
Plaintiffs-Appellees,
v.
HUNT MANUFACTURING CO.,
Defendant-Appellant,
and
JOSEPH F. POSILLICO,
Sanctioned Party-Appellant.

July 24, 2000

Patentee brought action for infringement of patent for paper cutter with circular blades. The United States District Court for the Western District of Wisconsin, Barbara B. Crabb, J., entered judgment on jury verdict of infringement. Alleged infringer appealed. The Court of Appeals, Newman, Circuit Judge, held that: (1) evidence supported finding that patent was infringed under doctrine of equivalents; (2) patentee did not engage in inequitable conduct in patent prosecution; and (3) infringer could be sanctioned for pursuing baseless claim of inequitable conduct.

Affirmed.

Before NEWMAN, RADER, and SCHALL, Circuit Judges.

PAULINE NEWMAN, Circuit Judge.

Hunt Manufacturing Co. (Hunt) appeals the judgment of the United States District Court for the Western District of Wisconsin,[1] entered upon a jury verdict of infringement, under the doctrine of equivalents, of United States Patent No. 5,322,001 (the '001 or Fiskars patent) entitled "Paper Cutter with Circular Blades," owned by Fiskars Oy AB and Fiskars, Inc. (together "Fiskars"). Hunt also appeals the district court's determination that there was not inequitable conduct in the United States Patent and Trademark Office. Hunt and its counsel Joseph F. Posillico appeal the ruling that Mr. Posillico had vexatiously and unreasonably multiplied the proceedings on the issue of inequitable conduct, thereby incurring liability for Fiskars' litigation costs on that issue.

The judgment is affirmed.

* * *

II

INEQUITABLE CONDUCT

Hunt raised the defense that the '001 patent is unenforceable due to inequitable conduct by Fiskars during prosecution in the Patent and Trademark Office.

A ruling of inequitable conduct in patent prosecution requires the threshold findings that the applicant withheld material information from the PTO during examination of the patent or submitted material false information, and that the applicant acted with the intent to deceive or mislead the examiner into granting the patent. These findings must be made by clear and convincing evidence. *See Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 876, 9 USPQ2d 1384, 1392 (Fed.Cir.1988) (en banc). When both materiality and intent have been established, these facts

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[1] *Fiskars, Inc. v. Hunt Mfg. Co.*, No. 97-C-0255-C (W.D.Wis. Aug. 4, 1998).

are weighed to determine the ultimate question of inequitable conduct.

This issue was tried to the court as to the findings of underlying facts of materiality and intent, as well as the ultimate question of whether these facts constituted inequitable conduct. This procedure is within the district court's discretion, as explained in *Hebert v. Lisle Corp.*, 99 F.3d 1109, 1114, 40 USPQ2d 1611, 1614 (Fed.Cir.1996), and on appellate review the district court's factual findings are reviewed for clear error while the ruling on the ultimate question is reviewed on the standard of abuse of discretion. *See Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 541, 16 USPQ2d 1622, 1624 (Fed.Cir.1990); *Kingsdown*, 863 F.2d at 876, 9 USPQ2d at 1392.

A

Hunt states that four material items were withheld from the PTO with the intent to deceive or mislead the examiner. The four items were three prior art paper cutters and a patent to Benavidez. Hunt concentrated its argument on a paper cutter called the "Maruzen device," which the inventor had seen at a trade show. The inventor testified that he considered this device to be the closest prior art.

The prosecution history shows a brochure describing the Maruzen paper cutter listed on PTO Form 1449 ("List of References Cited by Applicant(s)") and submitted to the PTO. Although Hunt does not dispute that the Maruzen brochure was submitted to the FF0, Hunt argues that the examiner did not consider it, pointing to the line drawn through this listing on Form 1449. *See* Man. Pat. Exam. P. 609 (7th ed. 1998) (directing an examiner to line through a reference that is not being considered).[2] Hunt states that this

[2] MPEP 609 directs an examiner to line through, and not consider, a prior art reference when the requirements of 37 C.F.R. §1.97 or §1.98 have not been satisfied. Hunt has not argued that Fiskars failed to satisfy

placed on Fiskars the obligation to stress to the examiner the relevance of the Maruzen device. However, the earlier PTO requirement that the applicant explain the relevance of the references listed was removed in 1992. Hunt makes no argument that Fiskars otherwise wrongly withheld the brochure.

The district court held that when a reference was cited to the patent examiner it can not be deemed to have been withheld, citing *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 1001 (Fed.Cir.1991). In Scripps the court held that inequitable conduct could not be based on an applicant's failure to cite a prior art reference, when the examiner independently cited the same reference. Hunt argues that the district court misread Scripps; we do not share Hunt's view. An applicant can not be guilty of inequitable conduct if the reference was cited to the examiner, whether or not it was a ground of rejection by the examiner. We do not know the examiner's reason for lining out the three cutters, but Fiskars' citation as prior art defeats Hunt's charge that the Maruzen device was withheld with deceptive intent. An applicant is not required to tell the PTO twice about the same prior art, on pain of loss of the patent for inequitable conduct.

The district court held that Hunt failed to introduce any evidence of withholding of prior art material to patentability. In its brief, Hunt discusses the features of the three cutters that are now asserted to be material to patentability. However, as the court observed, there was no evidence at trial as to how these three references compared in relevance to the thirteen references considered and listed by the examiner. The district

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any of these requirements, and the examiner gave no reason for the action. Therefore, we do not address the status of a reference that was submitted to the PTO without satisfying 37 C.F.R. § 1.97 and § 1.98.

court's ruling that Hunt produced no evidence of withholding of material prior art is well supported by the record.

On the issue of intent, Hunt provided no evidence of intentional withholding of material prior art. Hunt cites *Paragon Podiatry Lab., Inc. v. KLM Labs., Inc.*, 984 F.2d 1182, 25 USPQ2d 1561 (Fed.Cir.1993) for its observation that a "smoking gun" is "not always necessary," to establish intent to deceive. However, Paragon does not hold that there need be no evidence of culpable intent. In Paragon the affiants with "deliberate artfulness" swore that they were "not employed" by Paragon whereas they were owners or paid consultants of Paragon; this evidence was found to establish culpable intent. The court did not hold in Paragon that intent could be found without any factual basis. *See, e.g., Goodyear Tire & Rubber Co. v. Hercules Tire & Rubber Co.*, 162 F.3d 1113, 1122, 48 USPQ2d 1767, 1772 (Fed.Cir.1998) ("Both materiality and culpable intent are essential factual predicates of inequitable conduct, and each must be proved by clear and convincing evidence."); *B.F. Goodrich Co. v. Aircraft Braking Systems Corp.*, 72 F.3d 1577, 1584, 37 USPQ2d 1314, 1319 (Fed.Cir.1996) ("One alleging inequitable conduct must prove the threshold elements of materiality and intent by clear and convincing evidence.")

We affirm the district court's ruling that the facts predicate to inequitable conduct were not established.

B

The district court deemed the inequitable conduct claim "so lacking in substance as to constitute a waste of the time and resources of all the participants. "The court imposed sanctions on Hunt's counsel for "multiply [ing] the proceedings . . . unreasonably and vexatiously," 28 U.S.C. §1927,[3] and awarded Fiskars $8,582.50 of the attorney fees it incurred in defending against this charge.

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[3] 28 U.S.C. § 1927. Counsel's liability for excessive costs. Any attorney or other person admitted to conduct cases in any court of the

Hunt's counsel argues that the district court abused its discretion in imposing this sanction. He states that he presented a prima facie case of inequitable conduct, and that he did not act in bad faith. He argues that the inventor might have supported the charge of inequitable conduct had he been less credible or his testimony different, and that credibility could not be known until the inventor testified at the trial. Even a generous view of the record from Hunt's position does not weaken the district court's observation that neither material withholding nor intent to deceive was supported with evidence sufficient to make a prima facie case. An applicant's citation of prior art in accordance with the rules of the PTO precludes a finding of withholding of that prior art with deceptive intent.

The Seventh Circuit makes clear that liability under § 1927 for unreasonable and vexatious prolongation of the proceedings does not require that the actions were taken in bad faith. *See Knorr Brake Corp. v. Harbill, Inc.*, 738 F.2d 223, 226-27 (7th Cir.1984) ("This court has not required an express finding by the district court of subjective bad faith or intent to delay to support an award of fees under section 1927.") In the words of the district court, "[Hunt's] decision to pursue the counterclaim caused [Fiskars] to incur additional expenses, created extensive work for the court and cast a cloud over the integrity of the inventor and his original counsel." [4]

United States or any Territory thereof who so multiplies the proceedings in any case unreasonably and vexatiously may be required by the court to satisfy personally the excess costs, expenses, and attorneys' fees reasonably incurred because of such conduct.

[4] The patent attorney who prosecuted the '001 patent was retired, had undergone surgery for cancer, and was suffering significant cognitive difficulties. As the district court observed from his deposition testimony, he could no longer remember any detail about his work on the application for the '001 patent, including "whether he ever met personally with Boda [the inventor]."

In matters of trial management and attorney discipline, marked deference is owed to the discretionary rulings of the judge conducting the trial. *Abbott Labs. v. Brennan*, 952 F.2d 1346, 1351, 21 USPQ2d 1192, 1196 (Fed.Cir. 1991) ("It is improper on appeal to disturb a district court's trial management, absent a clear abuse of judicial discretion.") Absent a clear abuse of the trial judge's discretion, it is inappropriate for the appellate court to disturb a disciplinary action that is based on litigation conduct. Such abuse of discretion has not been shown. The sanction is affirmed.

AFFIRMED

(5)

No. 00-127

Supreme Court, U.S.
FILED
FEB 21 2001
OFFICE OF THE CLERK

IN THE

Supreme Court of the United States

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.,
Petitioner,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
and SAMSUNG SEMICONDUCTOR, INC.,
Respondents.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

SUPPLEMENTAL BRIEF FOR PETITIONER

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SUPPLEMENTAL BRIEF FOR PETITIONER

SEL filed its petition for a writ of certiorari on July 21, 2000. In opposing Samsung's cross-petition for certiorari, No. 00-138, we argued that the Solicitor General's position in *Buckman Co. v. Plaintiffs' Legal Committee*, No. 98-1768, warranted reversal of the Federal Circuit's decision against SEL also. SEL assumes that this Court decided to hold consideration of its petition pending the outcome of *Buckman*. On February 21, 2001, this Court decided *Buckman* in the manner favored by the Solicitor General. Petitioner believes that the reasoning and outcome of *Buckman* should result in the granting of its certiorari petition, the vacating of the Federal Circuit's decision, and either a full hearing in this Court or a remand to the Federal Circuit for reconsideration in light of *Buckman*.[1]

In particular, the central theme of SEL's petition was that it complied with the disclosure rules of the PTO in prosecuting its '636 patent. In accordance with the PTO rules that dictated its conduct, SEL provided the prior art patent (in Japanese), a pre-existing partial translation of it, and a concise statement that accurately identified that a feature in the prior art patent corresponded with a '636 claim limitation. SEL had no further obligation under the PTO rules governing its conduct, yet was found guilty of committing a fraud by omission on the PTO in the prosecution of its patent. The Federal Circuit was of the view that it could use the inequitable conduct doctrine to find common law fraud by omission even when PTO rules and its operating manual imposed lesser disclosure obligations, which admittedly had been satisfied by SEL.

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[1] This Court might also consider indicating that the decision below should be reconsidered in light of the Federal Circuit's later, apparently contrary, panel ruling in *Fiskars, Inc. v. Hunt Mfg. Co.*, 221 F.3d 1318 (Fed.Cir. 2000) (discussed in petitioner's reply brief).

In *Buckman*, this Court made two statements that directly support SEL's petition:

> (1) Here, the petitioner's dealings with the FDA were prompted by the MDA, and the very subject matter of petitioner's statements were dictated by that statute's provisions. Op. at 5.
>
> (2) Conversely, fraud-on-the-FDA claims would cause applicants to fear that their disclosures to the FDA, although deemed appropriate by the Agency, will later be judged insufficient in state court. Op. at 9.

We believe it is clear that the Solicitor General's position in regard to the proper result in *Buckman* was in no way limited to preemption cases. In its September 2000 amicus brief in *Raquel v. Education Management Corp.*, No. 99-1489, the Solicitor General asked for the reversal of a Third Circuit ruling which imposed on a petitioner for a U.S. copyright disclosure duties greater than those set out in the agency's manual of procedure. SEL is in exactly the same position.

For the foregoing reasons SEL requests that its petition for a writ of certiorari be granted.

Respectfully submitted,

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